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Dermatitis and Eczema Industrial Aspects*

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■ THERE has never been a time in the history of the world when the problem of keeping men fit for industry has been more vitally essential than in these days of mechanized warfare. Industrial medicine visualized this problem and since the First World War has made rapid progress. The importance of preventing industrial diseases is now recognized, especially protecting the skilled worker from avoidable hazards, for the loss of such workers might cripple our national defense. Industrial dermatoses, which comprise nearly 60 per cent of all occupational disease, require special consideration, for according to Lane,¹² Osborne and Jordon¹³ they can be prevented. Eight years ago I mentioned the apparent lack of interest in this field in America,⁵ but there has been a great awakening. The literature on the subject is now enormous; physicians are eager for knowledge; industry has realized the value of safeguarding its employes, and new states are continually expanding their laws to embrace occupational dermatoses among compensable diseases.⁸

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Definition

The committee appointed by the Section of Dermatology and Syphilology of the American Medical Association for the study of occupational dermatoses has defined an occupational dermatosis as any pathological condition of the skin for which occupation was the chief causal or contributory factor. It may comprise any lesion from a simple erythema to carcinoma. Occupational dermatitis (ergodermatitis) under the generic term "dermatitis venenata" is an inflammatory disease of the skin characterized by erythema, edema, and vesiculation, and caused by irritants contacted while at work.

Classification

Because of the multiplicity and diversity of such irritants some effort at classification is necessary, although no one will be entirely satisfactory. Classification of industries is of little value except where dermatoses appear fairly constantly, for industries change their processes frequently and use many new combinations in these processes.

Classification according to pathological lesions also has its shortcomings, since nearly all irritants produce varying degrees of pathological change, depending upon the intensity and duration of the application. The most scientific classification is based on the etiology, the type of agent.⁶ Irritants accordingly may be grouped as follows:

1. Mechanical or physical agents. The dermatoses caused by this group are the results of heat or cold, radiation (radium, x-rays), electricity, mechanical irritation (pressure or friction, cuts or pricks), and mechanical interference with bodily functions. The cause and pathological sequences of resulting injuries are easily recognized. Mechanical abrasions due to repeated trauma, harsh detergents, cutting oils, and contact

with abrasives and sand are frequent. Lesions may vary from pigmentation to epithelioma. The common eruption from mechanical interference with bodily function is a folliculitis occurring on the skin of employes contacting oils and silicates.

2. Flowering plants and their products.

(a) Redwood, teak, cocobolo, mahogany, boxwood, satinwood, Brazilian walnut, chestnut, and oak are woods which may cause a dermatitis.¹⁴

(b) Extracts and resins including oil of cardiol from the shell of cashew nuts and lacquers.

(c) Herbaceous plants¹⁵ (leaves, flowers, fruits, or roots.) Asparagus, barley malt, celery, chamomile, flax, grain dusts, hops, pyrethrum, rice, tobacco, tulips, lettuce, figs, oranges, and lemons have been proven to be offending agents. It is interesting to note that it is the outer surface of lemons and oranges that causes dermatitis.¹⁰

(3) Vital agents. The vegetable kingdom with its fungi, bacteria, yeast, yeast-like organisms, and molds, produces serious industrial diseases, disabling and even fatal, such as folliculitis, furunculosis, streptococcus infections, anthrax, erysipeloid, sporotrichosis, and coccidoidal granuloma. The animal group comprising mites and spiders causes annoying but trivial eruptions which respond readily to applications containing sulphur.

4. Chemical agents. These are so complex that they defy any exact classification. They may be divided into: Inorganic compounds, acids, bases and salts, hydrocarbons and crude coal tar products, oils, tars and turpentine, and other organic compounds such as dyes.

A comprehensive list is impossible, for every conceivable chemical may irritate and produce a dermatitis in some susceptible individual. Hence, an occupation should not be condemned because of a hypersensitive worker; transfer him rather than abolish a process thereby depriving other workers of their livelihood. The true hazards are soon recognized, such as arsenic, chrome compounds, chlorinated naphthalenes, rubber accelerators, pitch turpentine, creosote, and bakelite resins.

Dermatitis and Eczema

Ergodermatitis may be also classified according to the strength of these agents and the length of exposure as nonsensitization dermatitis (often called dermatitis artificialis or traumatica) and

sensitization dermatitis. Where the former ends and the latter begins cannot always be determined. Nonsensitization dermatitis is caused by a primary irritant which will affect practically all human skins. It is a cutaneous disturbance caused by mechanical or physical agents or primary irritants such as powerful chemicals applied accidentally or deliberately to the skin. It is characterized by all degrees of inflammation and frequently marked by destruction of all the layers of the skin and subjacent tissues. The causative factor is usually recognized and known to the patient. Noteworthy are self-inflicted eruptions (dermatitis factitia) produced to invoke sympathy, escape unpleasant duties, or secure compensation or remuneration. These present many bizarre and unnatural patterns and must be considered in the differential diagnosis of industrial dermatitis.

Sensitization dermatitis, also called eczema, contact dermatitis or contact eczema, allergic dermatitis or allergic eczema, is an inflammation resulting from repeated exposures to substances innocuous to a normal skin. The condition presents the usual lesions of dermatitis and is primarily an epithelial reaction with secondary inflammatory changes in the corium. The disease may be specific or nonspecific and is usually acquired in extrauterine life. In occupational eczema this hypersensitivity is so acquired. A review of my last 500 cases showed only one with a positive family history; thirty-three, or 6.6 per cent, disclosed a previous history of cutaneous eruption and of these thirteen, or 2.69 per cent, had been classified as industrial. The onset of a sensitization dermatitis is rarely manifested by a sudden explosion except when a person has contacted a substance for years, avoided contact with it, and has a renewed exposure, at which time his sensitization may appear suddenly and explosively.

When a worker presents a dermatitis it is important both from the viewpoints of economics and public health to decide immediately whether it is occupational or non-occupational and whether it is contagious or infectious. If the latter is true, the worker may infect others; if the former, the work may affect others. A knowledge of dermatology will decide the differentiation of the cutaneous disease, while an understanding of the work involved may solve the industrial question.

Diagnosis

The diagnosis of an occupational dermatitis is fairly obvious to the trained observer; nevertheless a complete physical examination and laboratory studies should confirm this diagnosis and determine if possible any predisposing factors. The causative factor should be established by careful history-taking and patch testing. A complete investigation should be made of the family and personal history. This history-taking should present a mental picture of the patient's routine and his contacts at home, at his pastimes, and at his work. In industrial pursuits the exact time of occurrence is especially important. An eruption appearing immediately after a vacation should lead one to suspect a non-industrial exposure; one appearing at the beginning of a day's work may suggest predisposing home factors such as worry and lack of sleep; one at the end of the day's work may indicate excessive fatigue, carelessness as a result of a rush season, or failure to use preventive measures. However, the incubation period varies so greatly that a keen detective instinct is required to solve these problems. In a recent survey young untrained workers were found most susceptible to occupational dermatitis.³ The introduction of new chemicals or the treatment of trivial injuries with sensitizing drugs should be specially investigated. From an economic point of view the day of the onset will determine which insurer is liable for a disabling dermatitis. The cause of industrial contact dermatitis due to a single sensitization is frequently solved, but difficulties multiply with the polysensitized person. Painsstaking history, however, will narrow the field of possible irritants and avoid needless patch testing.

Sites of Eruptions.—The sites of the eruption of an industrial dermatitis vary according to the contacts, involving for the most part the exposed areas such as the hands, arms, and face. Usually one or more parts are affected. The frequency with which various parts of the body are affected is interesting. Nine per cent of 1,004 cases investigated showed a dermatitis over miscellaneous regions. The following percentages were obtained from splitting up cases in which more than one part of the body was affected and distributing the data anatomically. The hands (47 per cent) were most frequently involved, followed by the fingers (13 per cent), forearms (7 per cent),

the feet and legs (each 5 per cent), the face (4 per cent), and the arms (2 per cent). The initial lesion and its location are important, for a dermatitis tends to appear at the site of maximum contact. The average worker in any given trade shows a fairly consistent history of the site and character of the onset and presents an eruption which is reasonably characteristic. For example, the eruption of the chocolate dipper generally begins on the right fourth and fifth fingers and the outer half of the dorsum of the right hand; the dry fissured appearance of the tips of the right first, second and third fingers with separation of the free border of the nails suggests a treer's dermatitis;⁷ hairdressers frequently exhibit inflammation of the adjacent aspects of the third and fourth fingers of the left hand due to holding the hair; a dishwasher's hands are markedly edematous, with maceration of the interdigital spaces; the baker's hand has a similar appearance with the additional factor of an eruption on the lower half of the ulnar area of the right forearm due to the rotary motion in kneading dough; a tanner presents a hide-like appearance of the forearms; the bricklayer and mason show a dry parchment-like skin, with occasionally a folliculitis on the anterior aspect of the right thigh where the trowel is carried; the shoedresser discloses a dermatitis of the dorsum of the first, second, third, and fourth fingers of the left hand, especially at the tips where he holds the sponge; a soda-fountain clerk presents paronychia and vesicles on the lateral aspects of the fingers of both hands, with enlargement of the epitrochlea and axillary glands; a shoe-trimmer's dermatitis is present on the dorsum of the thumb, the radial aspect of the index finger, and the dorsum of the hand over the first and second metacarpals; workers wearing heavy rubber gloves such as linemen show infiltration and erythema, with characteristic minute papules on the dorsa of the hands and the anterior aspects of the wrists; a machinist or worker who comes in contact with oil shows a typical folliculitis of the forearms, hands, and anterior aspects of the thighs; a fisherman presents a lichenified eruption over the lower ends of the ulnars, frequently complicated by small furuncles. An eruption involving the anterior aspect of the body and the face suggests exposure to steam such as the work of a kettle minder would entail. An eruption

about the ankles is usually due to trimmings and floor dust. These characteristic lesions are usually found in seasoned workers who have gradually acquired a sensitization which appears slowly and progressively and which is not due to some recently introduced chemical.

Patch Tests

In dermatology, especially industrial dermatology, patch tests are more effective than scratch or intradermal tests.² The technic of such tests is now familiar to all so that I will merely mention in passing that I now use scotch cellulose tape bound with narrow strips of adhesive at the edges to hold the test substance in place. It rarely gives a reaction such as frequently occurs after adhesive, and allows observation of the test substance without its removal. Early American advocates of these tests, Wise, Sulzberger, and Coca, advised against the use of too strong or too weak solutions or failure to reproduce the clinical exposures, the proper test sites, the danger of using too many closely allied substances, their use during phases of hyper- and hyposensitivity, and indiscriminate patch testing with stock collections.^{1,16} Experience has taught discretion. These tests are of value when corroborated by clinical data, and the amelioration or exacerbation of symptoms on elimination or reexposure to the proven irritant. Positive patch tests must produce a reaction similar to the disease from which the patient is suffering. Volatile solvents and essential oils should not be covered with occlusive dressings, for if a patient is sensitized he may suffer a marked exacerbation of the existing dermatitis. A positive reaction after seven days is usually a sensitivity produced by the test itself. Patch tests with rubber are prone to be delayed and show a tendency to flare up for periods of weeks and months. After the tests have been applied the patient should remain at the physician's office for at least an hour and the test sites should be scrutinized before dismissal. If negative, the test may be replaced and the site examined the following day. Negative sites should be examined repeatedly. Positive tests do not necessarily prove that the test substance is the cause of the dermatitis, nor does a negative test absolve it. Recently I read an article in an industrial magazine, by an industrial physician, in which he stated that during preemployment examinations he gave patch tests with phenol formaldehyde resins

in which he "superficially scarified the skin and many of the new workers were found to be hypersensitive, showing a reaction immediately or within twenty-four hours." It is evident that the patch test performance is not yet clearly understood. The skin should not be traumatized before or during the application of the test substances. Oil from uncooked cashew nuts, for example, is a primary irritant. Such irritants should never be used in patch testing sensitized persons, as they will react intensely to the slightest amount. Patch testing with essential oils, such as cashew nut shell oil⁴ and oil of cinnamon, may precipitate a generalized reaction which will leave the patient so sensitized that he may succumb to the weakest solutions.

Preemployment patch tests are not feasible, even when a hazard inherent in the industry concerned is involved, for the method is not dependable. Negative reactions may impart a false sense of security with resultant disaster. Application of chemicals under occlusive dressings for twenty-four to seventy-two hours does not parallel an ordinary industrial exposure. False positive reactions cause unnecessary rejection of applicants or needless expenditures to eliminate hazards which in reality do not exist. False negative reactions are deceiving. It is impossible to test adequately for airborne poisons, physical agents and their influence, trauma, powders and oils which interfere with bodily functions, or vital agencies, or to reproduce the ever-changing chemical combinations of an industrial process or the prolonged contact day after day with weak solutions or steam.

Dermatologists have all obtained negative results with an alleged irritant, and then observed a prompt outbreak when the patient returned to work. With such clinical evidence, negative reactions to patch tests should be disregarded. I do not believe that preemployment patch tests on workers are practical but I do believe that new chemicals in industry should have preemployment tests, made either upon subjects who will not later work with these chemicals or on guinea pigs.

Legal Aspects

In states where compensation laws enumerate the various occupational diseases covered there

may be little question about a disturbance or disease of the skin, but in jurisdictions like Massachusetts where occupational diseases as such are not compensable and a personal injury must be proved, the doctor must know what the words mean. The Supreme Judicial Court of Massachusetts (in *Panagotopoulos' Case*, 276 Mass. 600) said that it can be "found that industrial dermatitis, though termed a disease, is traceable to a 'personal injury' within the meaning of the workmen's compensation law (S. 26), and is not a 'simple disease resulting from employment.'" Furthermore, the "personal injury" for which compensation is payable is "physical deterioration flowing immediately from corporeal collision with a foreign substance set in motion by the business of the employer performed by the employe by virtue of his contract of service." (*Sullivan's Case*, 265 Mass. 497.)

Following these decisions the Massachusetts industrial accident board allows compensation for dermatitis caused by industrial irritations and for non-industrial dermatoses aggravated to the disabling stage by contact with irritants on the job. The board-members have no list of compensable and non-compensable skin conditions but treat each particular case on its own merits. In one instance a board member accepted a physician's opinion that a generalized cutaneous disease was due to industrial irritation although experts considered it to be a non-industrial psoriasis.

Medical testimony that a dermatitis was caused by contact with some chemical at work has been held sufficient to justify an award, even though the injurious chemical was not established nor could the evidence determine whether contact was by touching the skin or by inhaling vapors. (*Robinson's Case*, 1938 Mass. Adv. Sh. 417.)

Partial disability as well as total disability compensation is available under most compensation acts. Thus a workman who has acquired a hypersensitivity which prevents his working at a particular job, but not to employment in general, is protected. (*McCann's Case*, 286 Mass. 541.)

Recently the Massachusetts legislature adopted an amendment to permit the industrial accident board to refer a claim of industrial disease to three impartial physicians. These are allowed to examine the claimant, study the pertinent medical records, and investigate working conditions. Their opinion as to the extent and cause of disability is binding upon the parties and cannot be

rebutted. The constitutionality of this statute is being debated extensively, but until invalidated by the Supreme Judicial Court it is the law. This provision obviously prevents both employe and insurer from having a trial on the claim of industrial disease. However, workmen's compensation insurance coverage in Massachusetts is voluntary for both employe and employer. If either does not want insurance he can take his chances at common law. On such reasoning the statute would seem to be constitutional.⁹

Patch tests are assuming unexpected and unwarranted legal importance. A physician cannot testify to results unless he himself performed the tests. Courts have recently questioned whether it was good medical practice to fail to do patch tests, and injunctions are being issued on the assumption that the test substance used was not the one which caused the trouble but merely looked like it. I recently had an opinion ruled out by the Commissioner at the industrial accident board because I could not remember whether the insurer or the patient had brought the patch test materials to my office one year before. Tests with stock solutions cannot be admitted as evidence.

Treatment

When a worker suffers from an occupational dermatitis the sooner he is removed from his work the speedier will be his recovery. If his eruption is severe locally, with intense edema and vesiculation, or extensive in its distribution, hospitalization is advisable, particularly where both hands are affected. Warm wet dressings are of value. The alteration of two per cent boric acid solution with a solution of potassium permanganate, 1-5000, constantly for twenty-four to forty-eight hours has been found effective. If there is considerable pruritus, aluminum acetate, 5 grams in 100 c.c. of water, will often give prompt relief. With the subsidence of the edema and a resulting oozing and desquamation of the skin, lotions and pastes will be next in order. If there is any suggestion of infection, 5 to 10 per cent of sulpho-ichthyolate of ammonia (ichthyol) may be added. Soap and water should be avoided. The skin should be cleansed with mineral or olive oil and should be sponged with either a 2 per cent hot boric acid solution or the following solution which should be used in the quantity of a tablespoon to a quart of hot water: potassium chlorate 30, sodium borate 30, sodium bicarbonate 60. Persist-

ent pruritic patches may be treated later with ointments containing oil of cade or crude coal tar or monacetate of pyrogallol (leningallol). However, the prolonged use of ointments seems to irritate these dermatitides, especially where they have become secondarily infected by bacteria. Treatment with dyes may then be beneficial. Gentian violet and brilliant green may be used in varying strengths and combinations such as: brilliant green 1.2, gentian violet 1.2, alcohol 60, and water 60. Various industries have vainly sought specific remedies for prompt relief of their employes' cutaneous eruptions. It must be remembered, however, that once the skin is injured, the first principle of treatment is rest, sufficient for normal processes to heal the affected part. The physician must use only soothing remedies. Idiosyncrasies to drugs such as mercury, resorcin, and picric acid, should be anticipated and guarded against by pretherapeutic patch testing. The average period of healing is about six weeks. Ultraviolet radiation is of value if it is not used too soon; the same holds true of x-ray therapy. Coöperation of the patient is essential and the physician soon discovers if he is dealing with a malingerer.

Prevention

Klauder and his associates,¹¹ in an excellent article, found that in many cases, trade dermatitis is really not caused by the substances encountered at work, but rather with their removal by methods harmful to the skin. The importance of mechanical devices in the prevention of industrial dermatitis and the need of education of workmen and others concerned are emphasized in these studies, which include discussions of the use and abuse of soap, and soap substitutes, proper and improper employment of emollients, unnecessary exposure of the skin to primary irritants and to sensitizing substances, use of a brush instead of a cloth, use of a tool instead of the hand, use of protective sleeves, and provision of simple and easily provided facilities and preventive measures.

They discuss the value of protective hand creams and suggest several formulæ, the most practical one in my opinion being: white wax 10, hydrous wool fat 6, sulphonated olive oil 10, petrolati 75. They advise the application of olive oil, neat's-foot oil, or linseed oil before work for men whose hands become soiled. This facilitates

the removal of dirt, grease, and grime, especially if the oil is applied again to the soiled parts and removed with a clean cloth before washing with soap and water. As a substitute for the mechanic abrasive soaps, equal parts of sulphonated neat's-foot oil and liquid petrolatum containing 25 per cent gelatin are added to white granulated corn meal in the proportion of 1½ parts by weight of the corn meal and 1 part by weight of the oil mixture. At the end of the day's work equal parts of hydrous wool fat and olive oil, cottonseed oil or neat's-foot oil should be rubbed on the skin. A formula containing sulfonated neat's-foot oil 45, light liquid petrolatum 45, gelatin 25 per cent aqueous solution 10, is recommended as a satisfactory detergent and exerts more of an emollient action. Oatmeal flour, especially when combined with boric acid solution instead of water, is suggested for cleansing the hands of patients with eczema.

Prevention can be achieved by education; hence, public lectures to the laity and talks to employers and workers are important. The latter in particular should be told about irritating contacts, such as poisonous chemicals and plants. Labeling is also essential in the case of all volatile solvents and irritating chemicals. Even though a laborer suffers a mild dermatitis he may, under careful observation, continue his work and later become desensitized. This happened in my own experience to various bakelite molders, treers, and even mica workers, who under treatment were enabled to pursue their chosen trades.

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Forensic Psychiatry In Michigan*

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■ Prior to the termination of the eighteenth century the psychiatrist played little or no role in the criminal court as the court would entertain no defense on the grounds of insanity other than "absolute madness." However, the concept became gradually less narrow during the first half of the nineteenth century, when such terms as partial insanity and delusional insanity came into vogue. A truly scientific presentation of the findings of the psychiatrist continued to be hampered by the philosophical considerations of the "knowledge of right or wrong" and the strictly punitive approach. Progress was further restricted by the opinions of the judges formulated after the famous McNaghton trial of 1843. The tendency to pursue a very literal interpretation of these opinions has persisted to date. From a legal viewpoint an individual is either perfectly sane, or absolutely insane. The inflexibility of this concept has made expert testimony difficult, particularly in borderline cases. In order to convince the jury of a defendant's sanity or insanity, attorneys have indulged in a form of questioning which has done much to degrade the statements of the psychiatrist in court. Throughout such procedures there has been a tendency to focus the attention of the

court on some isolated symptom or feature of the personality, thus avoiding a presentation of a complete study of the individual as a whole. Very able lawyers and psychiatrists have made numerous attempts to change the punitive procedure and philosophy so that emphasis might be placed on the individual rather than the crime. Despite such efforts there has been no appreciable change in attitude until very recently.

As a reaction to public interest and feeling, the Michigan State Legislature has made various attempts during the past several years to obtain more adequate control over criminal sexual psychopaths. As a result of these efforts the Public Acts of 1939 contain two laws that deserve the attention of the medical profession and are of particular concern to psychiatrists. Act No. 165 is for the purpose of defining and controlling criminal sexual psychopaths and Act No. 259 provides for psychiatric examination of individuals charged with murder. With the advent of these new laws psychiatric testimony assumes increased importance and in order to meet this responsibility adequately it would be decidedly advantageous if a certain uniformity of attitude and approach could be cultivated.

In order to control criminals with a propensity for the commission of sexual offenses the State of Michigan found it necessary to forsake the punitive approach and to consider such individuals as psychopathic personalities. Although the law concerning sexual psychopaths was promoted primarily to permit the control of such individuals, it does secondarily permit the cultivation of a much more scientific approach to crime. Under the procedure which it provides the psychiatrist can present a complete case study, including the defendant's social background, personality development, the psychodynamics of his behavior, including if he wishes, recommendations and prognosis. Since such case studies can be presented in writing and since it is unnecessary in most instances for the psychiatrist to appear in court, the confusing and misleading questioning previously indulged in is thus largely eliminated. It is to be expected that if the psychiatrist presents complete, practical, and conservative case studies his reputation in court will be appreciably improved and the advantages of individualized criminology will become at once obvious. If the courts can be convinced of the practicability of study and treat-

*Based on a paper presented to the Michigan Society of Neurology and Psychiatry, March 14, 1940.

ment rather than punitive procedures it will become less difficult to fulfill the recommendations of the American Bar Association. These recommendations include in brief: Psychiatric service in every criminal and juvenile court, a psychiatric study before sentence is passed by the judge, a similar service in every penal and correctional institution, and a similar report before transfer or release of any prisoner.

Such progress having been accomplished, the second step would be the development of a tribunal composed of psychiatrist, psychologist and social investigator working as a team in co-operation with all courts and correctional institutions.

The third step would be the most radical and would envisage the abandonment of the present punitive philosophy entirely. Under the proposed regime the jury would become purely fact-finding in character and defendants instead of being sentenced would be committed to a treatment commission. This commission, composed of educator, sociologist, psychiatrist and criminologist, would after a period of study and investigation designate the type of treatment to be followed, such as education, trade training, psychotherapy, et cetera.

Probation would similarly be under the supervision of this group. Those individuals who were not found to be amenable to treatment or probation would remain under protective detention for an indefinite period. It is readily seen that such a program would not burden the state hospitals with psychopaths but would, on the contrary, place more psychiatrists and other scientifically minded individuals in the field of criminology. The initiation of such a program would be at first costly but would become in the course of years more economical than the present punitive approach and would, furthermore, constitute a sound scientific and social advancement.

INCREASED WISDOM

A man should never be ashamed to admit that he has been wrong. It is another way of saying that he is wiser today than he was yesterday.—*The Journal of the Michigan State Dental Society*, April, 1940.

Chronic Non-Tuberculous Lesions of the Lungs*

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■ THERE ARE certain portions of the body which, by virtue of their anatomic structure, are more amenable to diagnosis by the roentgenogram than by many other methods. With this advantage of diagnosis at hand, we owe it to ourselves as well as the patient to recognize and comprehend any deviation from the normal chest film. Such a field in medicine is chronic non-tuberculous lesions of the lungs, and it is the purpose of this paper to enumerate and differentiate by means of the roentgenogram those chronic lesions that are the greatest diagnostic problems.

We must never lose sight of the value of a correct history from the patient, for the roentgenogram of the chest without history as to occupation, duration, and clinical symptoms is nil. The importance must be exceptionally stressed in the differentiation of pneumoconiosis from pneumomycosis or simple passive congestion of a decompensated heart.

For convenience in presentation, the following grouping will be followed.

1. Normal chest variations
2. Passive congestion
3. Chronic pneumonitis
4. Chronic bronchitis
5. Bronchiectasis
 - (a) Saccular
 - (b) Cylindrical
6. Lymphoblastoma
7. Pneumoconiosis
 - (a) Without pneumonitis
 - (b) With pneumonitis

*From the Department of Roentgenology, Alexander Blain Hospital, and Receiving Hospital.

8. Abscess
9. Cystic disease of the lung and pneumocele
10. Pneumomycosis
 - (a) Blastomycosis
 - (b) Aspergillus
 - (c) Actinomycosis
11. Infiltrative carcinoma
12. Bronchogenic carcinoma
 - (a) With atelectasis
 - (b) With abscess

Types of Chests

Normal lungs may be found in a various number of deformed chests. The rachitic chest is one typically characterized by the rachitic rosary, Harrison's groove, and a prominent sternum. The long, flat chest is the type commonly met with in pulmonary tuberculosis. The thorax is elongated; the elliptical shape of the ribs is flattened, and the subcostal angle is acute. The barrel chest form tends to become cylindrical with a greater cubic capacity. The ribs are elevated and everted; the Louis' angle becomes prominent.¹⁵

Passive Congestion

Passive congestion is to be found almost invariably in some cardiac affection. Probably the most common form is that known as hypostasis. The roentgenogram usually shows the increased vascular markings due to stasis of the pulmonary veins, with an accompanying enlargement of the heart. Passive congestion is usually confined to the bases with a variable amount of fluid in the costophrenic angles.

Chronic Pneumonitis

Chronic pneumonitis is variously described as chronic pneumonia, interstitial pneumonia, and cirrhosis of the lung. The etiology of the lesion embraces nearly every type of disease to which the lung is subjected. Properly speaking, it is the result of the potential chronicity of the primary infection. In any chronic pneumonitis of long standing duration, a varying degree of fibrosis with of course all its features develops. Chronic passive congestion sometimes leads to interstitial changes. In the chest film one visualizes a diffuse infiltration of one or both lung fields with numerous areas of density of varying sizes interspersed. There is also an accentuation of the linear markings which represents fibrosis. The tendency of an unresolved broncho or lobar

pneumonia is to pass into a stage of chronic pneumonitis.

Chronic Bronchitis

Chronic bronchitis is never a disease of the young, but contrary to the consensus of opinion it is encountered in the advancing years of those patients with faulty circulation or some chronic pulmonary condition such as asthma or emphysema. Chronic bronchitis is not to be confused with other lesions, for it is here that fibrosis about the bronchi and peripheral emphysema produce thickening of both hilum shadows, marked increase in the linear bronchovascular markings at the base, and a diffuse increased radiability of the lungs.

Bronchiectasis

The diagnosis of bronchiectasis, especially the early stages, has been much improved in the past few years by the use of iodized oil and improved x-ray technic. Here again the diagnosis is not usually confused with other lesions. The radiologist suspects bronchiectasis from a plain chest film by the honeycombed appearance of the inner bases of the lungs. It is from this that a bronchogram is advised to rule out simple pneumonitis. With a bronchogram we can recognize two types, the cylindrical and the sacculated form. The first presents a uniformly dilated bronchus which may be likened to a glove. A subvariety of the cylindrical form is the fusiform type, in which the dilated bronchi taper somewhat at the terminal extremity. The sacculated type shows the extreme degree of dilatation; bronchi dilating at one particular point or at varied points of the same branch.

Lymphoblastoma

Lymphoblastoma is a rare form of tumor of the lung, and reports are usually limited to a few cases. Blastoma produces an enlargement of the lymph nodes of the mediastinum and hila with a generalized infiltrative process extending peripherally (Fig. 1). This may produce a very confusing picture, especially if there is no enlargement of the hilar nodes, and one must rely upon the process of elimination of other diseases by the greatest coöperation with the clinician. Enlarged glandular elements elsewhere in the body should throw immediate suspicion on to the blas-

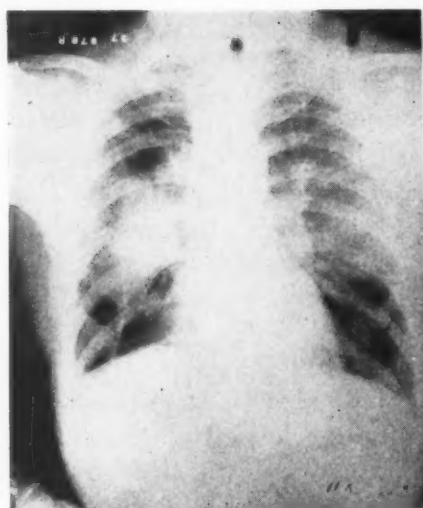


Fig. 1. Hodgkin's disease. Enlargement of lymph nodes of hila with generalized infiltrative process extending peripherally.

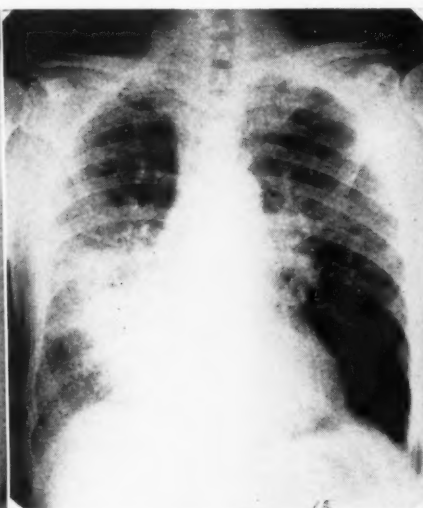


Fig. 2. Third stage pneumoconiosis with nonspecific pneumonitis of the right lower lobe.



Fig. 3. Pneumocoele following pneumonia outlined by means of a bronchogram.

toma group. Because of the sensitivity of Hodgkins' disease to deep x-ray therapy, it is urgent that a diagnosis be made.

Pneumoconiosis

Pneumoconiosis is a term applied to pulmonary affections which develop as the result of the inhalation of dust. This word has become quite common due to its relation with compensation laws. There have been various names offered to designate the type of dust which is the offender. Until now we are not able to demonstrate the etiology from the chest film.¹⁰ X-ray examination is the only certain method of recognizing the disease. In the radiograph one might class the disease according to three stages. In the first stage there is an increase in the hilum shadows with a prominence of the linear markings and bronchial shadows. The second stage is characterized by a mottled appearance throughout the lung structure which is most marked in the middle two-thirds of both lung fields. The third stage is recognized by the appearance of a diffuse fibrosis. The fine mottled appearance gradually becomes conglomerate and finally passes into a stage of dense fibrosis. Fibrous bands may be seen branching into various directions throughout the lung fields. The heart and mediastinum may be displaced or retracted from the fibrosis. It is during this transition from the second to the third stage that non-specific pneumonitis occurs as a result of the inability of the lungs to combat infection (Fig. 2). Tuberculosis is frequently superimposed.

Pulmonary Abscess

Pulmonary abscess may be single or multiple. The single abscess may be the result of pneumonia, foreign bodies, or the inhalation of emboli from an operative field in the upper respiratory tract. The diagnosis is not difficult in the radiograph when one realizes they most frequently occur in the lower lobes in contradistinction to the tuberculous cavity and abscess in a necrotic neoplasm. An abscess usually starts with an area of hazy radiating density in the lower half of the lung field. Later, a cavity develops in which the lung markings are not well outlined. In the upright position one may see a fluid level. If the abscess remains for a considerable length of time, extensive fibroid changes in the adjacent lung tissue may develop. Multiple abscesses are very seldom chronic and will therefore not be discussed.

Congenital Cystic Disease

Congenital cystic disease of the lung until 1925 was considered rare. Gradually various writers reported the number of cases coming under their observation, and hence the increasing importance in the differential diagnosis of pulmonary lesions. In 1934 Wood²² reported sixteen cases at the Mayo Clinic and in 1935 Pearson¹⁶ reported that one hundred and seventy-two cases had been recorded. In congenital cystic disease the condition may persist into adult life. In fact, they may remain silent as long as they are sterile. In most cases a number of thin walled cystic cavities are

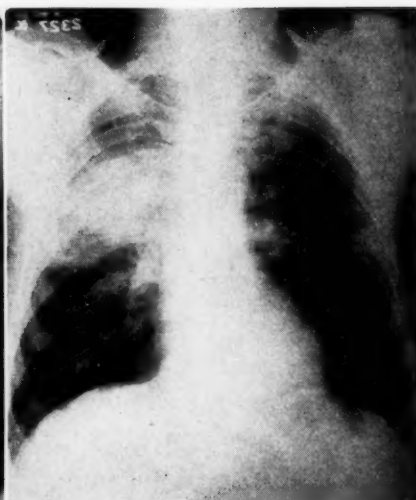
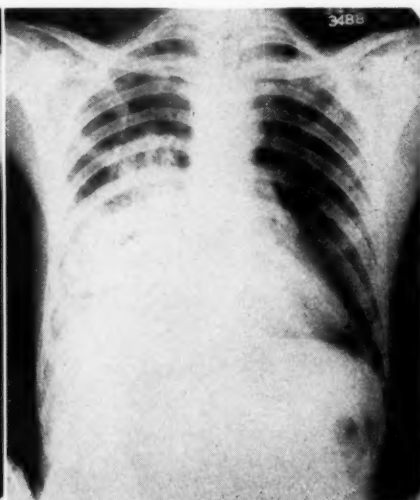
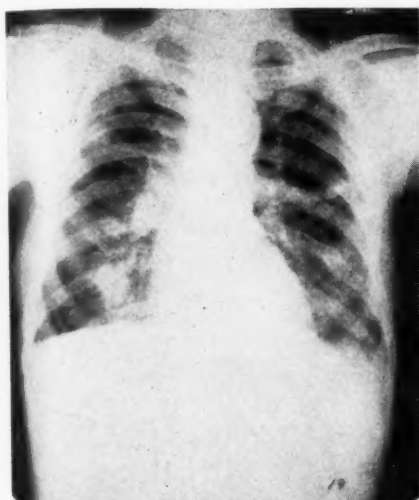


Fig. 4. Blastomycosis. Patchy-like pneumonic areas distributed throughout both lung fields.

Fig. 5. Aspergillosis. Proliferative type of infiltration radiating from the right upper lobe into the periphery.

Fig. 6. Primary carcinoma of the right upper lobe. Infiltrative type.

noted with or without a small amount of fluid in them. They may be irregularly distributed throughout both lung fields. Cysts completely filled with fluid without evidence of any inflammation surrounding may simulate other pulmonary lesions. Usually a single congenital cyst filled with fluid resembles a benign tumor such as a neurofibroma, hydatid cyst, or aneurysm. In such cases the radiologist may have to be contented with the diagnosis of nonspecific tumor mass of the lung. Multiple air filled cells are often mistaken for a hernia of the stomach or bowel through the diaphragm, and it is safer then to examine the patient with an opaque media.

Pulmonary Pneumocele

Pulmonary pneumocele, as the name implies, is a tumor filled with air. Pierce and Dirkse¹⁷ have described it as a "localized alveolar or lobular ectasia which are a few contiguous emphysematous alveoli that tend to increase in volume slowly or rapidly and assume massive proportions." Our feeling is that the pneumocele has its origin in a lobular pneumonia which has weakened those alveoli that finally dilate. Some writers feel this is the result of a congenital weakening. The pneumocele is recognized in the radiograph by a thin walled, air containing cyst that may or may not contain fluid. There is usually evidence of a resolving pneumonic process about the area. It has been necessary in our department to resort to opaque media to rule out a loop of bowel in the pleural cavity (Fig. 3).

Pneumomycosis

Pneumomycosis should be considered in the differential diagnosis in anyone having clinical pulmonary symptoms. Because of the rarity of the disease, it is often overlooked. It is reported that pneumomycosis was first described by Hughes Bennett in 1842.¹² Later other writers reported tuberculosis with a fungus infection of the pleura. Since then more attention has been placed on the importance in recognizing mycotic infections. It is well to state here that the diagnosis of these lesions is not primarily one of the radiologist. The roentgenologist can go far towards recognizing it, but not until the laboratory technician has isolated the fungus can one say definitely it is a mycotic infection.

Blastomycosis.—When blastomycosis attacks the respiratory tract, both hila and bronchi are first involved with the appearance of small bronchopneumonic-like areas distributed throughout the lungs (Fig. 4). The disease frequently is limited to the upper lobes and more often the right upper lobe. However, it may involve the entire lung field. The extent of invasions may vary from several small discrete areas of density simulating miliary tuberculosis to a large confluent consolidation of the lung. In the more severe chronic cases the confluent areas may break down, become necrotic, and produce an abscess.

Aspergillosis.—Chronic pulmonary aspergillosis is another fungus infection that should be considered in every patient having chronic pulmonary symptoms. The occupational history is

of some importance as it has been observed mainly in those individuals who come in contact with grain, flour and chickens. The onset of the disease is not far removed from that of an acute upper respiratory infection which continues on and is similar to chronic pulmonary tuberculosis. The roentgenogram reveals a proliferative type of infiltration radiating from each hilum into the periphery of the lung field (Fig. 5). Some have described it as a spider web pattern. As the disease continues, a varying degree of fibrosis may develop. There is an absence of calcified lymph glands and involvement of the apex which should distinguish it from tuberculosis. By no means is the roentgenogram conclusive, and one must rely upon the sputum examination and skin tests for the diagnosis.

Actinomyces.—Actinomyces is another fungus infection which is relatively widespread in cattle and is frequently referred to as "big jaw." The disease is transmissible to man through the alimentary or respiratory tract of cattle and manifests itself most frequently as a chronic pulmonary lesion. The roentgen chest examination reveals a diffuse miliary process involving both lung fields and the pleura. The infiltrative process may coalesce and become a confluent indistinct area of opacity. As a result of the poor blood supply, necrosis and cavity formation may occur. There may be fluid in the pleural cavity due to the invasion of fungus; this being true, it is an advantage to examine the fluid for sulphur granules. Spontaneous perforation of a chest wall abscess is strongly suggestive of underlying mycotic infection. In any event the conclusive diagnosis rests upon the finding of streptothrix actinomycetes.

Primary Carcinoma

Within the past two decades our ideas regarding primary carcinoma of the lungs have undergone a sharp change. At first it was thought that the incidence of malignant disease of the pulmonary system was increasing. Perhaps this is partially correct with the increase in exhaust gases, asphalt and tar that are supposed to be a predisposing factor, but there has been an increase in the ease with which lesions of the chest may be diagnosed. The radiologist suspects it, the bronchoscopist obtains a biopsy, and the pathologist confirms it.

For the sake of convenience, in our department

we divide carcinoma of the lung into two groups: (1) The infiltrative type which invades the parenchyma and only later obstructs the bronchus; (2) The obstructive type which primarily arises from the wall of the bronchus and obstructs the lumen early, causing a varying degree of atelectasis of that portion of the lung.

The *infiltrative type* (Fig. 6) represents the undifferentiated cell carcinoma which is characterized by a fan-shaped peribronchial infiltration extending peripherally from the root of the lung. There is early metastases and consequently a mass at the hilum is frequently noted. Secondary infection is a less common complication than in the obstructive type of growth.

With the *obstructive type* the problem of differential diagnosis becomes exceedingly great, especially when an inflammatory process such as pneumonia is superimposed. The decreased aeration from atelectasis promotes a fertile spot for pneumococcal growth. An inflammatory process alone can usually be distinguished by the relative absence of atelectasis and the more irregular character of the lesion. Delayed resolution of a pneumonic process in a patient past thirty-five should cause one to be on his guard for the possibility of underlying malignancy. Tumors of the mediastinum and aneurysms of the aorta may cause atelectasis. In such cases the Potter-Bucky diaphragm is necessary for greater penetration. Fluoroscopy and blood serology are extra advantages that aid in the differentiation. The opacity produced by tumors of the mediastinum does not extend into the lung as far as that produced by malignancy of the bronchi; also they are more sharply defined, and rarely produce obstruction of a bronchus.¹⁸ A bronchogram may also be done to show the obstruction or narrowing of a bronchus from a neoplasm.

Carcinoma with Abscess.—The relative grade of malignancy often gives rise to another diagnostic feature, namely, bronchogenic carcinoma with abscess. The tumor mass growing rapidly destroys large numbers of vessels and thus decreases its own blood supply so that the central mass starts to degenerate. This central mass finally liquefies and is discharged into a bronchus. By so doing, air reaches the necrotic mass and produces the picture of a lung abscess on the radiograph. Pyogenic abscess may develop distal

to the neoplasm as a result of the secondary infection. The degenerating malignant area of excavation should not be confused with the smooth, thick wall cavity of a pyogenic abscess, or the thinner walled cavity of tuberculosis, or the extremely thin walled cysts or pneumoceles.⁴

Metastatic malignancy, extrathoracic irradiation, tularemia, echinococcic cyst and reaction secondary to aspiration of mineral oil are other chronic conditions which should always be borne in mind in an adequate differential diagnosis of chronic pulmonary lesions.

Summary and Conclusions

1. This paper is presented in the hope that the physician may become better acquainted with those non-tuberculous lesions of the lungs that should be suspected in any patient with chronic pulmonary symptoms.

2. From our experience it is evident that the roentgenologic manifestation of the discussed lesions of the lungs is a most valuable diagnostic aid.

3. In a great percentage of cases the roentgenologist can recognize the abnormality or the pathology and in most of the others can contribute facts which, when coupled with the history and laboratory data, will lead to a diagnosis.

4. We have briefly discussed the salient characteristics in the roentgenogram of the chest which may aid in the differential diagnosis.

5. Any chronic pulmonary lesion is very serious and in any event the result either directly or indirectly produces a remarkable mortality rate.

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Intestinal Suction Drainage

In Facilitating One-stage Resection of the Right Colon*

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■ ONCE the diagnosis of carcinoma of the large bowel has been made and the absence of positive evidence of distant metastases determined, it becomes the duty of the physician to see that surgical exploration of the lesion is undertaken as soon as the patient's condition will permit. In general, the main causes for delay are; the presence of a poor state of general nutrition; anemia; dehydration; and distention. Regardless of the location of the tumor, before its eradication is undertaken, much good can be accomplished by a period of preparation to allow decompression of the bowel above the lesion and rehabilitation of the patient.

Rehabilitation is brought about by hydration and feeding. The patient should be put on a high protein, high caloric, low residue diet, as well as an adequate fluid intake. We have come to feel that if any formidable operative procedure is contemplated, especially when intestinal

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anastomosis is to be done, the body should be supplied with the materials which enable it to carry on the reparative processes concerned with healing. In a recent review of the literature

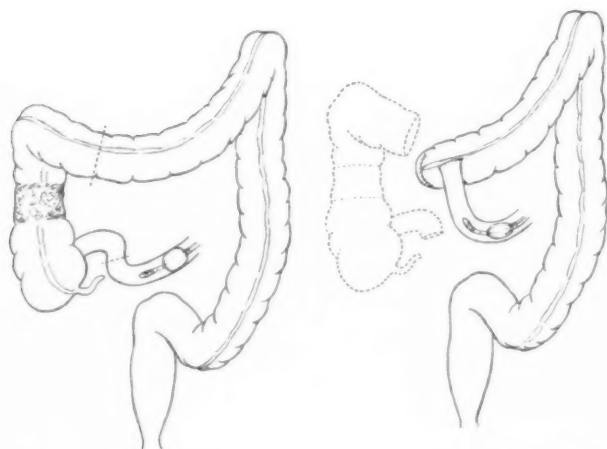


Fig. 1. (left) Carcinoma of ascending colon. The balloon-tip intestinal tube has been passed until the tip rests in the terminal ileum. Bowel between dotted lines is to be removed.

Fig. 2. (right) Right half of the colon has been resected and the terminal ileum anastomosed to transverse colon. The tip of tube with balloon deflated is allowed to remain just proximal to stoma. Constant suction is maintained.

on the subject of abdominal wound disruption, Winfield and myself¹ found that in a series of 1,458 collected cases of wound disruption 33 per cent occurred following operations for carcinoma or for peptic ulcer. During the past year, working with Irvin,² in the course of some 200 determinations of the concentrating levels of plasma vitamin C and serum protein, we were amazed to find routinely low values in all cases of malignant disease of the gastro-intestinal tract. We have therefore made it a routine to restore the serum protein level to approximately 7 gms. and the plasma ascorbic acid concentrations above .7 mgm. per 100 c.c. of blood plasma. If anemia is present, the red count should be brought to normal with blood transfusions, and blood plasma transfusions may be used as an adjunct to feeding in bringing the serum protein levels up to normal.

Decompression of the Bowel

We have come to believe decompression of the bowel is fully as important in the preparation of the patient as rehabilitation. In the presence of distention from a varying degree of obstruction, rehabilitation cannot be accomplished until decompression has been satisfactorily brought about. Decompression of the bowel, depending upon the degree of stenosis and the location of

the tumor, is now done in several ways. Occasionally in a low growth, one easily reached with the proctoscope, it is possible to pass a rectal tube beyond the stenosed area. Following this procedure, gentle rectal irrigations are given and the accumulated fecal material above the tumor is removed. Not infrequently, after the bowel has been thoroughly emptied, the stenosed area opens up sufficiently so that the patient may be able to go to stool normally. If the growth is higher in the colon, simple irrigations alone will sometimes accomplish this result. Gentle purging, as suggested by Jones,³ may help in the removal of solid fecal material above the tumor, but this should be done carefully and only if the obstruction is not complete. When these methods do not promptly relieve the distention, it may be necessary to do a cecostomy or a colostomy. As an adjunct to the handling of the problem of distention from a partial to complete large bowel obstruction, we have recently been accomplishing decompression by means of the balloon-tip intestinal tube, the tip of which passed into the lower ileum and serves as an efficient enterostomy. During the past three years, on the Surgical Service of Receiving Hospital, this tube has been passed in over 150 cases of organic bowel obstruction. Johnston and his co-workers⁴ have proved this to be of decided value in the decompression of distended bowel, and in the treatment of obstruction.

Miller-Abbott Tube.—In any obstruction of the colon we do not hesitate to introduce the balloon-tip intestinal tube into the intestine. If the obstruction is situated in the left colon, intubation may not afford prompt relief and other means of decompression must be employed. It must be remembered that prompt relief of the distention, that is the emptying of the colon, is essential and a cecostomy or colostomy may be necessary depending upon the location of the tumor, completeness of obstruction, and evidence of reflux into the small intestine. In obstruction situated in the right half of the colon, intestinal intubation may prove an efficient means of relieving distention, and, generally speaking, the closer the obstruction to the cecum, the more good can be accomplished by this method.

It is a well recognized fact that, in the presence of gastric or intestinal distention, operation upon the gastro-intestinal tract is more hazardous,

not only because of increased danger of spill of intestinal content, but because of interference with healing at the suture line. The use of gastric suction by means of a small nasal catheter

tion of a case in which the right half of the colon was removed for an obstructing carcinoma of the ascending colon. It also illustrates the value of suction drainage at the operative site

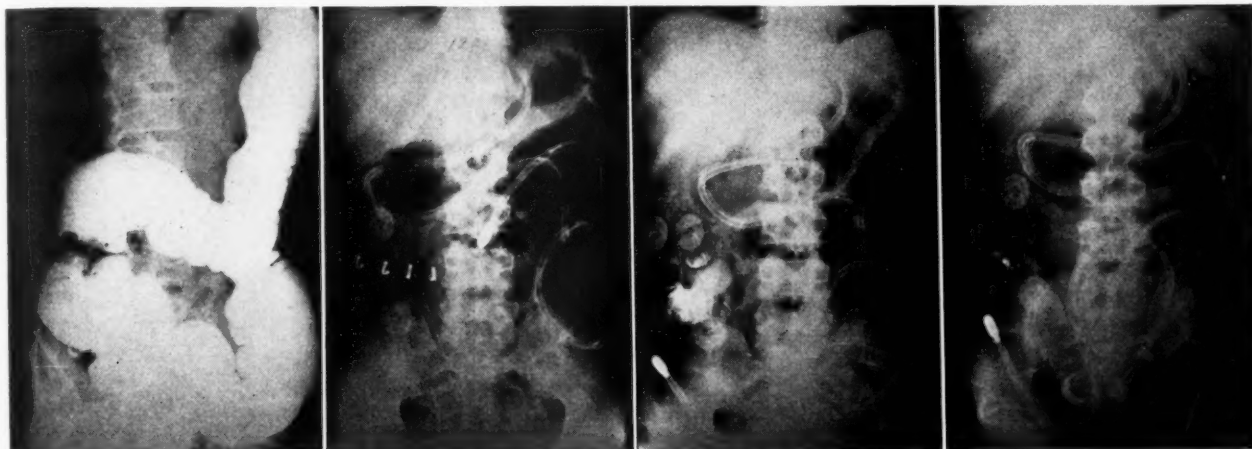


Fig. 3. (left) The colon is shown outlined with a barium enema. A characteristic stenosed filling defect will be noted in the center of the transverse colon. The diagnosis—carcinoma of the ascending colon.

Fig. 4. (right) Flat x-ray plate of the abdomen on first postoperative day. The skin clips and wire tension sutures will be noted in the transverse type incision. There is a mild distension, consequently the balloon was inflated and passed until the tip was in the vicinity of the stoma giving relief of the distension.

Fig. 5. (left) X-ray taken on the tenth postoperative day. A small amount of thin barium mixture was injected down the tube. This will be seen as a small puddle just proximal to the stoma.

Fig. 6. (right) X-ray taken the following day after the tube had been clamped for twenty-four hours reveals that there is no distension and only a few flakes of barium remain in vicinity of the stoma. The tube can now be safely removed.

has long been employed in operations upon the stomach, both before, during and after operation. If intestinal surgery is contemplated in the lower reaches of the intestinal tract, we feel it even more important to take measures which will eliminate the possibility of distention. Rankin⁶ recognizes this danger, and in performing a one-stage removal of the right colon, advises a complementary ileostomy 20 to 30 cm. above the anastomosis. The blood supply of the small bowel and the colon is normally not as rich as that of the stomach, with the result that distention may have an even more disastrous effect upon healing of the suture line. When possible, we pass the balloon-tip intestinal tube before operation to a point in the intestine just proximal to the probable site of anastomosis (Fig. 1). Not infrequently there is some swelling and edema about the site of the stoma which tends to occlude it sufficiently to obstruct the passage of intestinal content. Aspiration just proximal to the stoma obviates distention (Fig. 2). Leigh and his associates,⁵ and Ravdin and Abbott⁷ have recently advised this procedure.

Typical Case

The following case is illustrative of the advantage of intestinal intubation in the prepara-

in controlling distention postoperatively, and in facilitating operation.

The patient, a fifty-nine-year-old male, was admitted to the Surgical Service with a one-year history of vague abdominal pain, occasional nausea, a gradual increase in the number of stools, and some weakness without weight loss. Examination revealed a moderate abdominal distention and a tumor in the right loin. A proctoscopic examination was negative. A barium enema revealed a characteristic filling defect (Fig. 3). The balloon-tip intestinal tube was passed until the tip lay in the lower ileum, with relief of the abdominal distention. The patient was put on a high protein, low residue diet, and given several blood transfusions. He was also given 500 mgm. of vitamin C daily, and one week later operation was performed, and a large obstructing carcinoma was found in the ascending colon. The ileum was severed about 5 inches from the cecum, and the proximal end anastomosed to the transverse colon. The distal portion, together with the cecum, ascending colon and hepatic flexure was removed. The next day there was noted slight distention. An x-ray revealed the tube to be not quite far enough down (Fig. 4). Accordingly, the balloon was distended with air and the tube passed until the tip was in the vicinity of the stoma, giving complete relief of the distention. On the tenth postoperative day a small amount of barium was injected down the tube. This will be seen as a small puddle just proximal to the stoma (Fig. 5). The tube was then clamped for twenty-four hours. The following day

the barium passed in the stool. X-ray revealed only a few flakes remaining near the stoma, and the absence of any distention (Fig. 6). Consequently the intestinal tube was removed. The use of intestinal suction drainage in this case not only permitted operation in one stage, but contributed markedly to the smooth convalescence of the patient. Two months following the operation, no evidence of obstruction at the site of the stoma was evident, barium introduced by enema passing readily into the ileum. The patient has remained well and is having regular and well formed bowel movements.

This case is presented to illustrate the advantages of intestinal intubation with suction drainage in the management of lesions of the right colon. Its use has permitted us to perform a one-stage procedure where we formerly used two stages, and with less difficulty to the patient than is usually attended with either part of the staged procedure.

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THE WAY OF THE WORLD

In the world of yesterday women were denied sex freedom but permitted to have many children. In the world of today women are permitted larger sex freedom but are denied children. In both cases a phase of living is denied and adjustment to the situations created is demanded through the instrumentality of a palliative. In the former case the gift of children palliated the loss of freedom; in the latter case the loss of children is palliated by a means of allegedly safe promiscuity and of economic adjustment to an inequitable social order.

War should perhaps be regarded in somewhat the same light. It is a complete denial of rational living for which a number of fraudulent palliatives are offered, such as the absorption of the unemployed into the army and into wartime industrialism, and the temporary granting of favors to the underprivileged, none of which gestures touch upon the basic inequities which inure in a sick society.—*Medical Times*, April, 1940.

Type III Pneumococcus Meningitis

Recovery Following Sulfathiazole*

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■ COMPARATIVE studies in animals have shown that sulfathiazole is much less toxic than sulfa-pyridine, yet is almost as effective against the pneumococcus, and probably superior against the staphylococcus.^{1,2,3,4,5,8,10} Preliminary reports in humans^{7,9} are in keeping with the results in animals but much more clinical experience will be necessary to conclusively determine which is the preferable therapeutic agent. The following case is reported to record: (1) a dramatic response of a type III pneumococcus meningitis to sulfathiazole; (2) the development of bronchopneumonia during the administration of large doses of the drug; (3) the sudden appearance of renal insufficiency and sulfathiazole retention; (4) stupor, delirium and generalized epileptiform convulsions as possible toxic manifestations.

Case Report

F. W., forty-six years old, white, female, diabetic, was admitted to Detroit Receiving Hospital, January 11, 1940, complaining of draining ears since December 26, and right-sided convulsions of five days' duration.

Past history.—A diagnosis of diabetes mellitus was made in 1934, when the patient consulted a physician because of pruritis vulvæ, polydipsia, polyphagia and polyuria. At that time she had an infected toe which failed to heal until she was placed on a diabetic diet

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with 10 units of regular insulin before breakfast and supper. Three years ago she discontinued insulin and ceased to follow her diabetic diet. Since then she had had intermittent pruritis vulvæ but was otherwise in fair health.

Present illness began on December 23, 1939, with running nose, sore throat, dry cough and bilateral earache. On December 26, both ear drums ruptured spontaneously and a purulent discharge appeared. During the succeeding week she had an irregular fever, with chilly sensations and sweats, and was confined to bed. The bilateral aural discharge continued and hearing diminished greatly. On January 4 she noticed weakness and ataxia in the right hand, which soon extended to the right arm and leg. On January 6 she had a clonic convulsion which began in the right hip, spread to the right leg, then to the right arm and lasted about a minute. During the next five days there were five to ten similar attacks daily. About fifteen seconds before the onset of each attack, she had a sense of epigastric discomfort which she recognized as a warning of an impending convulsion. During the attacks she was unable to speak but did not lose consciousness. She was not incontinent and did not bite her tongue during the convulsions.

Physical examination on admission revealed an apathetic white female with rather marked bilateral middle ear deafness. There was a purulent discharge in both external auditory canals and bilateral mastoid tenderness, most marked on the right. The left pupil was slightly larger than the right and both reacted well to light and accommodation. The optic fundi were normal except for a single cotton-wool patch in the left fundus and slight arterial narrowing. There was lateral and slight vertical nystagmus. The lateral nystagmus was of first degree with quick component to the left. The neck was not stiff and the Brudzinski and Kernig signs were negative. There was distinct muscular weakness with hypotonia in the right arm and leg. Biceps, triceps, patellar and ankle jerks were diminished on the right. Plantar reflexes were normal. There was definite ataxia on the right in both the finger-to-nose test and the heel-to-knee test with eyes open as well as with eyes closed. There was asynergy and dysmetria on other movements of the right arm and leg. Adiadokocinesis was present in the right arm and check movements were impaired. Sensory examination was entirely negative. The remainder of the physical examination was negative except for a blood pressure of 180/110. X-rays showed cloudiness of the right mastoid and petrous portion of the temporal bone and slight cloudiness of the left mastoid. Roentgenogram of the chest was negative.

Pre-operative course (January 11-16).—The temperature was normal in the morning and averaged 99.6° F. in the evening. The pulse ranged between 90 and 110. The blood sugar on admission was .286 per cent and the urine contained a large amount of glucose. There was no significant acidosis, however, since the blood CO₂ combining power was 49 volumes per cent

and the urine contained only traces of acetone. The patient was placed upon a four-feeding diet furnishing a total of 206 grams of available glucose and received 30 units of protamine zinc insulin and 10 units of regular insulin daily. The glycosuria was reduced to a trace but the fasting blood sugar ranged between .170 per cent and .250 per cent. The patient was observed in several unilateral clonic convulsions similar in every respect to those described in the present illness. The convulsions were considered by all observers to be typical of the Jacksonian epilepsy characteristically associated with supratentorial lesions, and quite unlike the torsion movements sometimes accompanying cerebellar lesions. The remainder of the neurological examination, however, pointed to a right cerebellar rather than a cortical lesion. The hypotonia, ataxia, et cetera, increased in degree, but no new neurological signs appeared. Spinal puncture, on January 12, revealed a clear fluid under a pressure of 125 mm. water with normal Queckenstedt response. The fluid contained only 2 WBC per cu. mm. and the globulin, colloidal gold and Kline tests were negative.

Operation.—A right complete mastoidectomy was decided upon because of persistent purulent discharge from the middle ear together with signs of advancing cerebellar disease and was performed on January 17 by one of us (J.M.R.). The mastoid was filled with granulation tissue and contained a moderate amount of pus. After exenteration of the mastoid, the sigmoid sinus was uncovered and found to be normal. The dura of the posterior fossa was exposed in the area of Trautmann's triangle. On elevating the dural plate, a small perforation of the dura was found which led into a cyst 2x5 cm., which displaced the cerebellum to the left. The cyst was aspirated and a serous exudate was removed. The cerebellar convolutions could easily be seen and were distinctly flattened. The cyst cavity was lightly packed with iodoform gauze and the mastoid was closed in the usual manner. Further exploration of the cranial cavity was not attempted.

Development of type III pneumococcic meningitis.

—On January 18, the temperature rose to 104°. There was profuse thin purulent discharge from the mastoid incision, but no clinical signs of meningitis. On the morning of January 19, however, she was irrational, the neck rigid and Kernig's sign was positive. A spinal puncture was done, revealing a cloudy fluid containing 12,100 polys per cu. mm. No organisms were found on direct smear. Since staphylococcus aureus had been recovered from the aural discharge, sulfamethylthiazole* was started on the supposition that the meningitis was also staphylococcic. Spinal fluid culture, however, showed that the meningitis was due to type III pneumococcus. In the 18-hour interval before the report of the culture, the patient received a total of 10.5 G sulfamethylthiazole without any dem-

*The sulfamethylthiazole was furnished by the Winthrop Chemical Company; the sulfathiazole was furnished by E. R. Squibb and Sons.

onstrable effect on the course of the meningitis. Spinal fluid, taken two and one-half hours after the last dose, contained 16,500 polys per cu. mm. and was still positive for type III pneumococcus. Sulfathiazole* was then substituted.

Dramatic response of the meningitis to sulfathiazole.

—A total of 14 G of sulfathiazole was given on January 20, the first 5 G intravenously as the sodium salt, the remainder by mouth. The following morning she was mentally clear and her temperature was normal. The spinal fluid cell count had fallen to 472 per cu. mm. and organisms were no longer recovered. Sulfathiazole was continued in a dose of 2 G every four hours (six times daily) up until the morning of January 30. The meningeal signs cleared up, the spinal fluid remained sterile and the cell count dropped to 33 on January 26, and to 5 per cu. mm. on February 2.

Development of bronchopneumonia during the course of sulfathiazole therapy.

—On January 24, the patient had a chill, followed by a rise in temperature to 104.6°. Blood culture at this time showed a non-hemolytic staphylococcus aureus. Inasmuch as four previous and six subsequent blood cultures were sterile, it seems likely that this organism was merely a contaminant. On January 25, there were physical and roentgen signs of a patchy consolidation in the left lower lobe. Previous x-rays of the chest, taken on January 12 and 19, were negative. The consolidation thus developed during sulfathiazole therapy. The blood level of free sulfathiazole on the morning the consolidation was detected was 6.7 mg. per cent. The sputa were consistently negative for pneumococcus, both on direct smear and on passage through the mouse. For this reason, and because the development of pneumonia during the administration of massive doses of sulfathiazole was most unexpected, other possible explanations for the consolidation were sought. The unilateral distribution of the lesions excluded left heart failure and made multiple pulmonary emboli most unlikely. There was no previous history nor subsequent evidence to suggest bronchiectasis. There was no evidence of massive collapse but the possibility that the consolidation began as a lobular atelectasis could neither be definitely established nor excluded. The course was compatible with pneumonia. There was moderate pleuritic pain but the sputum did not become rusty. The temperature ranged between 100° and 102° until January 29, when it fell to normal. Roentgenogram on February 3, showed only slight decrease in the consolidation but a check ray, on February 16, showed complete resolution.

Development of renal insufficiency with retention of sulfathiazole.—The patient received 10.5 G sulfamethylthiazole on January 19, 14 G sulfathiazole on January 20 and 12 G of sulfathiazole daily thereafter up until January 30, for a total of 127 G. Blood concentrations of free sulfathiazole were quite variable during

the first week of therapy, ranging from 1.2 to 8.1 mg. per cent, the highest level being obtained on January 27. No determination was made on January 28. Between January 19 and 28, the patient frequently complained of nausea, and vomited on seven occasions. Nausea and vomiting were present before the drug was started and may have been due, in part, to the meningitis. There were no other toxic symptoms until January 29, when the patient became drowsy and disoriented. The blood concentration of free sulfathiazole had increased abruptly to 20 mg. per cent. The next morning, the blood level was 17.4 mg. per cent and the drug was discontinued. On January 31, twenty-four hours after sulfathiazole had been stopped, the blood level was 15.1 mg. per cent. Sulfathiazole excretion was very slow. The blood level was 12.1 mg. per cent on February 1; 5 mg. per cent on February 3; and was still 1.1 mg. per cent on February 7, eight days after the drug had been discontinued. There was coincident nitrogen retention, the blood urea being 96 mg. per cent on February 2 and again on February 5, then falling gradually to 60 mg. per cent on February 8 and to 38 mg. per cent on February 23. On that date, 24 days after sulfathiazole had been discontinued, renal function was still impaired as shown by a urea clearance of 46 per cent. The urea clearance rose to 87 per cent on March 13, but the ability to concentrate the urine was impaired. During the period of sulfathiazole administration and up until February 3, specific gravities as high as 1.025 had been attained in sugar free specimens. Thereafter, a specific gravity above 1.015 was not attained either in numerous single specimens or on repeated concentration tests (Olmstead method) until just before discharge when it reached 1.017. Urine specimens were examined for blood daily during the administration of sulfathiazole and during the two-week period following its withdrawal. No more than 1 red blood cell per high power field was found at any time. In spite of the absence of hematuria and the failure to find acetylsulfathiazole calculi in the urine, the renal insufficiency was considered a toxic manifestation of sulfathiazole. Paralleling the nitrogen retention, there was a fall in blood CO₂ combining power. The latter, in volumes per cent was as follows: 52 on January 30, 36 the following day, 27 on February 1, 20 on February 3, 30 on February 5 and 58 on February 10. Since the diabetes was well controlled during the entire period on a daily carbohydrate intake of 150 grams, the fall in blood CO₂ combining power was attributed to the renal insufficiency.

Toxic manifestations referable to the central nervous system.

—On January 29, coincident with an abrupt rise in blood sulfathiazole to 20 mg. per cent, the patient became drowsy and disoriented. The next morning she was delirious, the blood level being 17.4 mg. per cent. At noon on January 30, she had a generalized epileptiform convulsion which lasted about two minutes. She had four similar convulsions during the afternoon and evening and two the next forenoon, at which time the blood level was 15.1 mg. per cent. These were the first and only convulsions since the

*The sulfathiazole was furnished by E. R. Squibb and Sons.

mastoidectomy. These convulsions differed from those which had occurred pre-operatively in that they were bilateral and symmetrical from the onset and were accompanied by loss of consciousness and followed by stupor. The question arose as to whether the convulsions and other cerebral symptoms were due to the sulfathiazole, to hypoglycemia, to extension of the intracranial inflammatory process or to cerebral vascular complications of the hypertension and nephritis. Acute nicotinic acid deficiency was not considered at that time but, in retrospect, it can probably be excluded inasmuch as a complete recovery was made without the administration of nicotinic acid or any of its derivatives. The convulsions were probably not due to hypoglycemia because one occurred while an intravenous injection of glucose was in progress (after 250 c.c. had run in); another occurred shortly after an intravenous injection of 25 G of glucose. The blood sugar taken after another convulsion was 71 mg. per cent. The fasting blood sugars had been normal since January 26. No regular insulin had been given since January 24, and the protamine insulin, which had been temporarily increased during the meningitis to bring the diabetes under control was reduced to 30 units on January 30. Neurological examination still showed slight hypotonia and hyporeflexia on the right but failed to reveal any evidence of extension of the intracranial lesion. The meningeal signs had entirely disappeared and the spinal fluid, on February 2, was under a pressure of 100 mm. and was entirely negative. There was no significant change in blood pressure, no evidence of edema of the optic discs nor retina on the days when she had the convulsions. There were no further convulsions after January 31, whereas the renal insufficiency persisted for many days. Thus, by a process of exclusion of other possibilities as well as from the fact that the stupor, delirium and convulsions appeared coincidentally with the abrupt rise of blood sulfathiazole and gradually disappeared as the blood level fell, it was concluded that the cerebral symptoms were probably due principally to sulfathiazole retention. Convulsions have been reported in animals from the intravenous injection of sodium sulfapyridine,⁶ but not, to our knowledge, from sulfathiazole. It is possible that the coexisting intracranial infection was a conditioning factor.

Other toxic manifestations.—The hemoglobin was 10 G per 100 c.c. at the advent of chemotherapy and was at the same level on January 30, when sulfathiazole was discontinued. During the next few days the hemoglobin fell off rapidly, reaching a low point of 6 G per 100 c.c. on February 6. There was no gross hemorrhage to account for the anemia, and no evidence of hemoglobinuria nor jaundice. Ferrous sulfate was started on February 10, and the hemoglobin had returned to its original level by March 4.

Condition at discharge on March 26.—The diabetes was well controlled by 35 units of protamine zinc insulin at 7:00 A. M. daily. The mastoid wound granulated in very slowly and was nearly healed by the

end of March. The left otitis media and mastoiditis cleared up during the course of sulfathiazole therapy without operative intervention. Hearing was practically normal. The ataxia, dysmetria, asynergy, etc., disappeared, the only residual neurological signs being nystagmus on lateral gaze and slight hypotonia and hyporeflexia on the right. The Jacksonian convulsions, which had occurred at the rate of 5 to 10 daily before the operation, did not return after surgical drainage of the cyst, which was found pressing against the cerebellum. While this would suggest that the Jacksonian convulsions were due to this cyst, the possibility of an unrecognized cortical inflammatory process which cleared up spontaneously or as a result of sulfathiazole could not be excluded.

Summary

A case of type III pneumococcus meningitis is reported which recovered following sulfathiazole. A total of 127 grams was given over a period of ten days. Bronchopneumonia developed during sulfathiazole therapy. The course was also complicated by the sudden appearance of renal insufficiency with sulfathiazole retention, stupor, delirium and epileptiform convulsions.

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A bill has been introduced in the Maine Senate, reports the *A.M.A. Journal*, which "proposes to create a state board of eugenics which is to be authorized to order the sexual sterilization of any person living in the state who is feeble-minded, insane, syphilitic, a habitual criminal, a moral degenerate or a sexual pervert and is thereby a menace to society in that he or she may produce offspring having an inherited tendency to the social inadequacies noted."

Radiation Therapy

In the Treatment of Malignant Disease of the Genito-urinary Tract

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■ IN GENERAL, malignant growths of the genito-urinary tract were formerly considered to be among the less favorable class of tumors in their response to high voltage x-ray therapy. This attitude was based upon the generally disappointing and unsatisfactory results obtained in trying to prevent recurrence and metastasis of the tumor by postoperative radiation after the growth has been removed as far as possible by operative interference.

In the last few years, since the first report of Waters, Lewis and Frontz¹⁰ (Johns Hopkins), in 1934, on the pre-operative radiation treatment of kidney tumors, it has been found that most malignant tumors of the kidney, bladder and testicle are definitely radiosensitive, and the emphasis has shifted towards pre-operative radiation for the purpose of reducing the size of the tumors and devitalizing them, so that subsequent operation becomes easier, more complete, and productive of better results.

To understand how radiation by high voltage x-rays can have this effect, it is necessary to recall that the sensitivity to radiation of any tissue depends on the degree of immaturity and lack of differentiation of the cells of which it is composed. Very cellular, rapidly growing tumors are more susceptible to radiation than are adult type cells, and this is especially true of embryonal tumors such as Wilms tumors in children, embryonal carcinoma of the ovary and testis and a few others.

There are many variations, however, because even tumors of definitely embryonal origin contain cells of different grades of differentiation, often containing a quite high proportion of adult

cells. The effect of radiation is to produce necrosis of the most radiosensitive cells, while the less sensitive cells are damaged or devitalized in proportion to their sensitivity, resulting in varying degrees of fibrosis or hyalinization which temporarily inhibit the further growth of the injured tissues. As a result of the absorption of the necrosed cells, the total volume of the tumor decreases, in rough proportion to the number of the most radiosensitive cellular elements.

Kidney

From the study of fifteen cases of kidney tumor in 1935, Waters⁹ drew the following conclusions:

1. Tumors of the hypernephroma type and embryonal carcinomas are radiosensitive.
2. Papillary carcinomas of the renal pelvis and the malignant cyst adenomas are radioresistant.
3. Irradiation has caused a striking reduction in the size of radiosensitive renal tumors and has rendered tumors which were inoperable, on account of their large size, operable.
4. Irradiation has caused extensive morphological changes in sensitive tumors, characterized by alterations in the cellular structure, extensive fibrosis, and necrosis. The cells become shrunken. The cytoplasm may contract around the nucleus, and in certain cases, the tumor has been completely destroyed and replaced by fibrous tissue.
5. Normal renal tissue is not damaged by radiation in proper dosage.
6. Reduction in size begins almost immediately after the institution of radiation, and continues for a period of several weeks after cessation of treatment.
7. Operative removal is imperative, and should be carried out within a few weeks after the first series, depending on the degree of shrinkage as revealed by palpation and pyelograms.
8. A regrowth of the tumor will occur if operation is delayed too long.
9. The pyelogram will differentiate the pelvic and cortical tumors in 80-100 per cent of the cases, and 93 per cent of all cortical renal tumors have been radiosensitive.
10. If it is found to be impossible to remove all the growth, postoperative high voltage x-ray therapy should be used. The results of inserting

radium needles into a vascular pedicle which is involved by a malignant growth have proven unsatisfactory.

Renal tumors in children, which are nearly always of the Wilms embryonal type, are extremely radiosensitive, and show a very rapid reduction in size during and after radiation therapy. The usual early and rapid metastasis of these tumors usually makes complete relief difficult, even though the metastases themselves are radiosensitive. There have recently been several newspaper reports of cases of this type. Competent observers⁷ state that about 25 per cent of kidney tumors are inoperable because of size or adhesions when first seen and that pre-operative radiation will reduce the size of the kidney in all cases except those of pelvic carcinomas, which do not comprise more than 10 per cent of kidney tumors.

Urinary Bladder

Most bladder tumors are of one of two general types, according to Ewing:⁴ papillomata, of which 50 per cent become malignant, and carcinomata diffuse or adenoid.

In the case of the papillomas, whether definitely malignant or not, an exception is made to the general rule and postoperative radiation following fulguration is generally advised. This is to prevent the recurrences which usually occur.

In the case of frank diffuse infiltrating carcinoma, about 50 per cent will be found to be moderately radiosensitive, so heavy pre-operative radiation is advised in all cases to reduce the size of the tumor and devitalize it wherever possible so that complete operative removal is made either possible or easier. The radiosensitive group of bladder carcinomas does not seem to belong to any definite pathological class, and there is no way known at present to differentiate them in advance from the radioresistant group.

As an example of the results obtained, one observer³ reports twenty-six cases of advanced infiltrating carcinoma of the bladder treated with 800 Kv. x-rays: seven cases (27 per cent) obtained complete or nearly complete regression so that excision or fulguration could be easily done; nine cases (35 per cent) obtained partial regression with relief of symptoms and improved operative conditions; and ten cases (38

per cent) obtained little benefit. Thus approximately 60 per cent were improved so that operation became either possible or more complete, and 40 per cent were unimproved. Heavy doses are necessary for good results, but severe skin reactions are not necessary. Similar results can be obtained with standard 200 Kv. therapy.

Testicle

Tumors of the testicle, like those of the bladder, are divided into two main groups (with many subdivisions). About 50 per cent are primarily embryonal teratomas or seminomas, and these are radiosensitive, but they usually contain also a mixture of more mature and less sensitive cellular elements. The other half comprises a confused group of predominately adult teratomas or mixed tumors, which are slow growing and radioresistant. There is no means of differentiating them clinically from embryonal teratomas except by the greater rate of growth and increased output of Prolan A by the embryonal teratomas.

These testicular tumors spread through the deep lymphatics to the lymph nodes around the abdominal aorta just below the renal pedicle and behind the peritoneum, thence through the thoracic duct to the subclavian vein and pulmonary circulation. For this reason radiation therapy, to be effective, must include the entire abdomen and mediastinum as well as the primary growth. The results of treatment of these tumors by surgery alone by means of orchidectomy, either simple or radical, have long been disappointing. The quoted results vary from 10 per cent five-year cures given by Ferguson,⁵ to 58 per cent five-year cures reported by Cabot and Berkson,¹ and in addition there is about 20 per cent mortality with radical orchidectomy.

In 1934 Ferguson,⁵ at Memorial Hospital in New York, reported much improved results from pre-operative high voltage x-ray therapy followed by simple orchidectomy in cases of teratoma testis, and introduced the method of checking the effectiveness of the radiation by means of comparative assays of the urinary content of Prolan A. The amount of Prolan A excreted in the urine was shown to diminish progressively under radiation treatment, and to increase again with the recurrence of metastases. In his latest report in 1938, Ferguson gives 40 per cent five-

year cures for teratoma testis, and urges extensive pre-operative radiation, followed by orchidectomy six to twelve weeks later. Waters⁸ reports 50 per cent five-year cures, and Cabot and Berkson¹ raised their five-year percentage to 71 per cent with the use of pre-operative and postoperative radiation.

Prostate

Carcinoma of the prostate is nearly always a slowly growing and highly radioresistant tumor, so that the results of radiation therapy, whether given by external high voltage x-ray or by radium implantations, are usually unsatisfactory. The use of radiation does not appear to destroy or appreciably slow the spread of metastases. In many cases, however, radiation is of great benefit in relieving the severe pain which often results from local extension or spinal metastases, and it is for this purpose that it can be most justifiably used.

The results obtained from the use of radiation in cases of carcinoma of the prostate are well illustrated by a recent report² from the University of Minnesota: of 112 cases treated by radiation alone, 7 per cent were well after twenty-one months ($1\frac{3}{4}$ years). Of sixty-seven cases treated by resection and radiation, 10.5 per cent were well after twenty-nine months ($2\frac{1}{4}$ years). They believe that radiation is desirable regardless of the absolute poor end-results, because of the relief of pain from extension and metastases and the decreased tendency to recurrent obstruction after its surgical relief. Not all observers will agree with this conclusion, and it seems clear that radiation therapy has not proved to be of sufficient value to be used routinely in all cases of carcinoma of the prostate unless the urologist is convinced that its palliative value is sufficiently great.

Comment

The fact that x-radiation cannot entirely destroy these growths and so effect a cure by itself (except perhaps in the most sensitive tumors, such as Wilms, in which some feel that radiation alone is sufficient without surgery) does not mean at all that it is valueless, but only that it should be used to take the utmost advantage of the devitalization and shrinkage in size which is the usual effect of radiation on these tumors. This obviously means radiation followed by

operation at the time of the maximum radiation effect—usually three to six weeks. In other words, we advocate the use of radiation therapy to induce what may be called a quiescent stage in the tumor itself, during which operative removal can be performed with greater mechanical ease and less risk of metastasis.

Conclusions

1. Radiation therapy with high voltage x-ray should be used as an essential pre-operative procedure in most cases of genito-urinary malignancy, and its proper use will greatly increase the successful operative results in malignant diseases of the kidney, bladder, and testicle.
2. About 90 per cent of kidney tumors, including all forms except pelvic carcinomas, are radiosensitive, and should have the benefit of pre-operative radiation, reserving postoperative treatment for those containing embryonal tissue or those whose removal was incomplete.
3. Most papillomas of the bladder, and 60 per cent of bladder carcinomas, are radiosensitive. Papillomas should have postoperative radiation to prevent recurrence, and carcinomas should have pre-operative radiation to improve the operative results.
4. Testicular tumors, especially teratoma testis, should be treated with pre-operative x-ray therapy followed by simple orchidectomy, and the progress of the treatment should be checked by frequent determinations of the excretory output of Prolan A.
5. Carcinoma of the prostate is generally radioresistant, and radiation therapy is best reserved for palliative relief of pain when necessary.

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Acute Gangrenous Cholecystitis In Children

Report of a Case in a Child Aged Four*

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■ In 1734, Mr. Joseph Gibson, Surgeon in Leith and Member of the Surgeon Apothecaries of Edinburgh, reported the first case of gall-bladder disease in a child. His patient was twelve years old and evidently had a ruptured gall bladder with liver abscesses. Since then cases have been reported at intervals but never in sufficient numbers to consider this condition as common. In a report in 1928, 226 cases were collected from the literature and four of that author's personal cases were added. By 1938, slightly over 300 cases had been reported. These were under 15 years of age and most were of a chronic nature. Cases, as a rule, are reported by surgeons as accidental findings at time of operation.

This should remind us that gall-bladder disease, even though it be in children, should be included in a differential diagnosis of abdominal lesions. Although clinical and post mortem records tend to show that this condition is quite rare, it is probable that gall-bladder disease in children is being overlooked. Acute cases must be included in the diagnosis, and ruled out completely, before being cast aside as too rare to occur.

A recent case on the Surgical Service of Drs. Brooks and Ashley in Harper Hospital is reported in detail.

Case Report

R. M., a four-year-old male, born May 20, 1936, was admitted to Harper Hospital at 11:22 P. M. on June 25, 1939. The history was elicited that he awoke on June 22, 1939, complaining of abdominal pain. He drank some milk but refused other food. He vomited

*From the Surgical Service of Harper Hospital, Detroit, Michigan.

APRIL, 1941

twice that day; the vomitus consisting of ingested food. The pain was more severe that night. On the next day (June 23, 1939) the patient felt better and complained very little. The following day (June 24, 1939) he again complained of severe abdominal pain and was given laxatives. He vomited twice including most of the medicine. He was nauseated and refused fluids. On June 25, the pain was more severe and an enema was given without any relief of symptoms. The patient was then admitted to the hospital late that night.

The patient's birth and developmental history were normal during the first year. Following this period the family was disappointed in his inability to gain regularly and were concerned about his poor appetite. He had not had any important illnesses except for a "mild cold" at the onset of his disease.

Examination revealed a fairly well-developed, fairly well-nourished male child of four years in acute distress. The throat was slightly injected. The tongue was moist. There were small glands in both cervical chains. There was a suggestion of icterus to the sclerae. The heart and lungs were negative. Pressure over the entire abdomen caused the patient pain. Pressure over the right side of the abdomen seemed to cause more pain than pressure over the left side. No masses were made out. The extremities were negative. A complete and satisfactory examination of the abdomen was not possible because of the irritability of the patient.

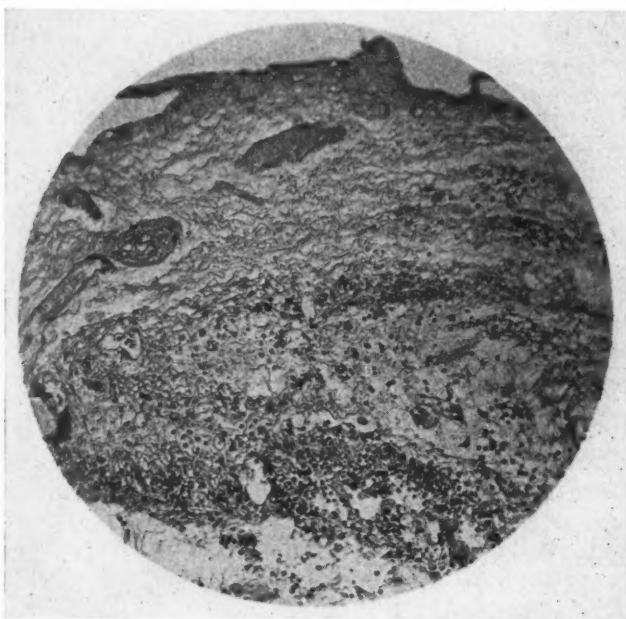
The temperature was 100.4, pulse 144, respirations 20. There were 7,400 leukocytes with 62 per cent polymorphonuclear cells. Urinalysis was negative.

A diagnosis of acute surgical abdomen was made and the finding of an acute appendix was expected. Operation was begun at 12:15 A. M., on June 26, 1939, under nitrous oxide-oxygen-ether anesthesia. The operative dictation reads:

Operation.—A 1½ inch right pararectus incision was made through a thin but fairly well developed abdominal wall retracting the muscle medially. On opening the peritoneal cavity there was a sudden gush of odorless dark brownish-yellow fluid which appeared to be bile stained. After exploration was carried out for a few minutes and the cecum could not be located the incision was enlarged to 3½ inches. The cecum, terminal ileum, and appendix were normal. There were no mesenteric glands. There was no evidence of a Meckel's diverticulum. On the omentum in the region of the liver was a 5 centimeter exudative area. In contact with this was a large, tense, gangrenous gall bladder. The liver appeared normal with sharp edges. The gall bladder was aspirated, cultured and a piece removed for microscopic diagnosis. No stones were found. Cholecystostomy was done, using two purse string sutures; the first including the wall of the tube. One soft drain was placed in Morison's pouch. The abdomen was closed in layers using cat-gut and reinforced with two waxed silk retention sutures.

The operation took thirty minutes and at the completion of the procedure the child was awake and in

fair condition. His temperature went to 102° a few hours later and in twenty-four hours it was 100° with a pulse of 110. Bile began draining at once and the child had an uneventful postoperative course. On the eighth postoperative day the soft drain was removed. On the thirteenth postoperative day the cholecystostomy tube came out. The retention sutures were then removed and the child discharged the following day.



Pathologic Examination.—The culture of the gall bladder failed to produce a growth. The pathologic report by Dr. P. F. Morse, pathologist at Harper Hospital, is presented with a photomicrograph.

Gross: A 1 centimeter piece of gall-bladder wall.

Microscopic: The cellular structure of the mucosa is destroyed and replaced by necrotic tissue shreds. The gall-bladder wall is edematous and intensely infiltrated with round cells. The structure of the gall-bladder wall can still be made out in the course of the connective tissue fibers and blood vessels, but is torn apart by exudate and islands of necrosis.

Diagnosis: Acute Gangrenous Cholecystitis.

At the present writing, about one year later, the child is quite well except that his parents still feel he is not gaining weight as rapidly as he should. He has not seen his physician for some time.

Occurrence.—In 3,000 operations performed on the biliary tract by the surgical services in Harper Hospital for twelve years ending in 1940, the rarity of gall-bladder disease in children is startling. One case operated at three months was a cholecystostomy as an emergency procedure for bile drainage in suspected congenital duct atresia. It terminated fatally. Post mortem examination was not obtained. One case of a four-year-old

is here reported. There were two cases in children of nine years. One case was a child thirteen years old and one case fourteen years old.

In the large group of cholecystographic studies made in Harper Hospital the rarity of a study in a child leads one to conclude that most physicians believe this is an impossible procedure. Children do tolerate the dye well. Parenteral administration can be resorted to if necessary. Improved technique and equipment add to the feasibility of doing studies in children.

As a rule during appendectomy in a child when a fairly innocent looking appendix is found, the surgeon explores the abdomen for mesenteric glands, Meckel's diverticulum, and congenital bands about the terminal ileum. A diseased gall bladder is easily overlooked because the incision is inadequate to admit two fingers for exploration and rather than enlarge the incision the operator dismisses gall-bladder disease as a rare entity. If this is the case, the symptoms which brought the patient to the physician originally would persist.

Conclusion

1. Gall-bladder disease in children is a definite entity and probably not very rare.
2. Many cases of gall-bladder disease go undiscovered because a clinical diagnosis is not made.
3. Cholecystographic studies should be made more frequently in children.
4. Surgical exploration of the biliary tract is not done often enough during the removal of a so-called "interval appendix."
5. A case of non-calculus gangrenous cholecystitis in a four-year-old child is reported.

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Amebiasis with Pleuro-Pulmonary Complications

Report of Two Cases*

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■ THE RELATIVE infrequency of pleuro-pulmonary complications in amebiasis and the failure to diagnose such cases during life warrants the report of these cases.

Case Reports

Case 1.—A white man, aged thirty-five, was admitted July 2, 1938, complaining of blood spitting, pain in the right chest, cough and abundant sputum. On February 1, 1938, he had a severe pain in the right lower chest, pleuritic in type, accompanied by chills and fever. During the next six weeks he was bedfast. X-ray studies of the chest made in March were negative. General impairment of health continued. On May 1, three months after the initial symptoms, he had a small pulmonary hemorrhage. During the next two months he continued to spit 100 to 200 c.c. of hemorrhagic bitter tasting sputum. The pain in the right chest was frequently referred to the right shoulder. When admitted he was weak, dyspneic on exertion, hemorrhages were profuse and there was complete loss of appetite. Diarrhea did not occur at any time.

The positive physical findings were marked diminution of resonance, breath sounds, whispered voice, and tactile fremitus in the lower half of the right lung. There was moderate muscle spasm and tenderness in the right upper quadrant of the abdomen.

The admission laboratory studies showed a mild leukocytosis. Sedimentation rate (Westergren) 103 mm. Blood Kahn negative. Four direct smears and a culture of the sputum were negative for *B. tuberculosis*. Stereo films of the chest showed a dense homogeneous shadow obscuring the lower quarter of the right lung. Bucky and lateral films localized the density in the posterior half of the lung field. The right diaphragm was elevated four centimeters higher than the left.

The initial studies failed to establish a definite diagnosis. No acid-fast organisms were demonstrated in

the studies of the sputum. A diagnostic right pneumothorax was induced. There was no empyema. Additional films suggested an extensive lung abscess. Lipiodol occupied only the anterior half of the middle lobe. The posterior half was free of oil. Three bronchoscopic examinations were made. There was no evidence of neoplasm or foreign body. Our consulting pathologist suggested we might be dealing with a liver abscess. A diagnostic pneumoperitoneum was induced. Roentgenograms showed the right lobe of the liver to be firmly adherent to the diaphragm. The stools were then examined and amebæ were demonstrated on two occasions. Emetine and stovarsol therapy was begun at once.

During the period between admission and the date when the diagnosis was established the patient's condition had grown progressively worse. He raised large quantities of hemorrhagic sputum. He continued to lose weight, his appetite was extremely poor, fatigue and malaise were marked. He slept very little and was very despondent. Pain in the right lower chest and right shoulder appeared frequently. His temperature ranged from 98 to 103.8. There was a moderately severe secondary anemia.

He was given alternating courses of emetine and stovarsol. Within thirty-six hours after emetine therapy was begun, his temperature became normal and remained normal. The sputum decreased markedly during the first four days and completely disappeared at the end of two weeks. Within a few days his appetite became ravenous, in contrast to the former extreme anorexia. He gained twenty-five pounds within a month. There were no toxic reactions from either drug. Eight stool examinations and frequent sputum examinations were negative for amebæ. The sedimentation rate was 19, in contrast to 103 on admission. The leukocyte count returned to normal. He was discharged September 16, 1938, as apparently cured and has remained well. Serial roentgenograms showed complete resolution.

Case 2.—A white man, aged fifty-four, was admitted September 16, 1938, complaining of severe cough, sputum, and pain in the right upper chest. In July, 1936, he developed severe diarrhea and the diagnosis of amebic dysentery was established the following October. A course of emetine therapy was followed by disappearance of all symptoms. He remained well until October, 1937, when cough, sputum, fever and loss of weight occurred. In January, 1938, he had pain in the right upper quadrant of the abdomen. A presumptive diagnosis of liver abscess was made and a second course of emetine was given. He responded immediately and remained well until July, 1938, when a relapse occurred. Severe cough and sputum, pleuritic-like pain below the right clavicle, night sweats and fever were present. During the next two months extensive, all-inclusive diagnostic studies were carried out at one of our large national clinics. They concluded there was no relapse of the amebiasis, but tubercle bacilli were found in the sputum and although the chest films were clear, they advised sanatorium care.

*From the Oakland County Tuberculosis Sanatorium.

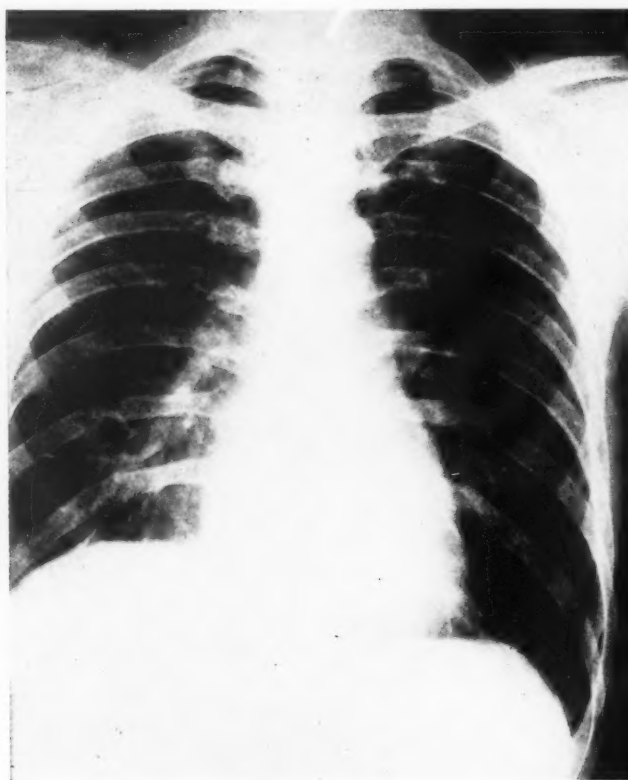


Fig. 1. Case 1. March 17, 1938. Right diaphragm elevated full interspace higher than left.

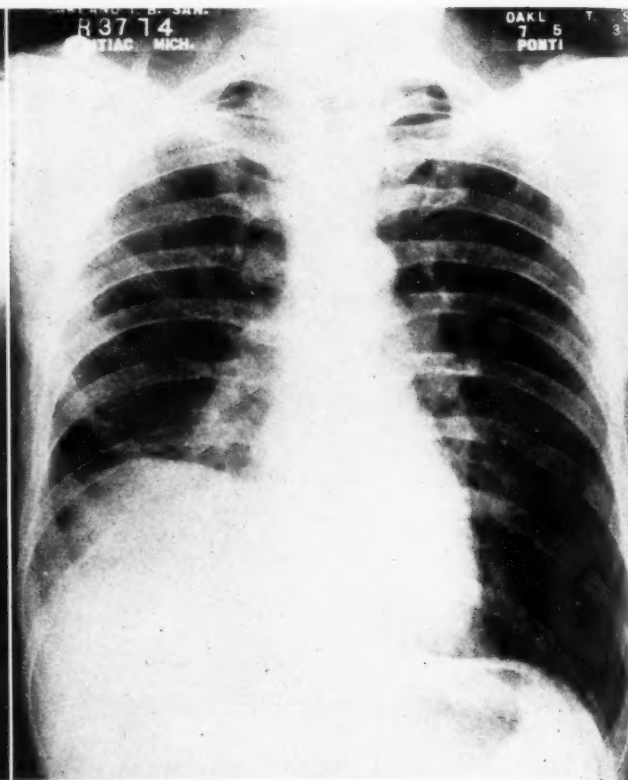


Fig. 2. Case 1. July 5, 1938. Dense homogeneous shadow obscures the lower one-quarter of the right lung field.

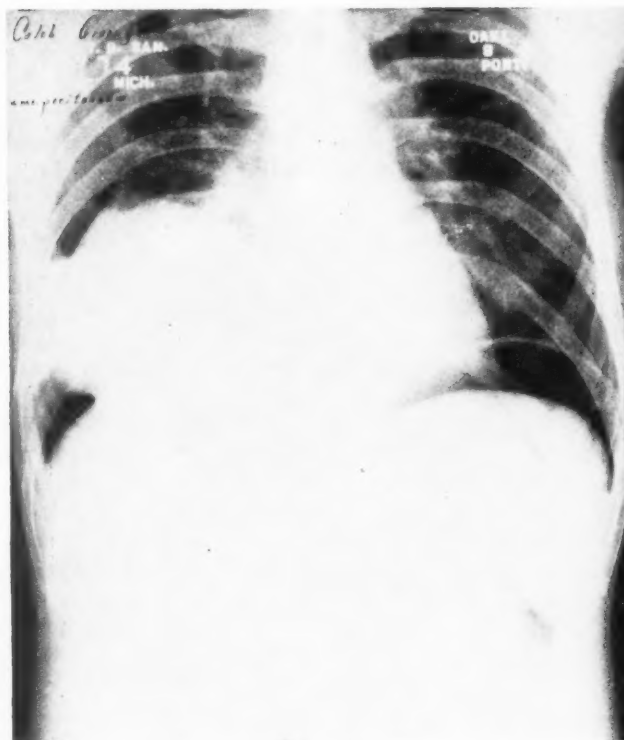


Fig. 3. Case 1. August 2, 1938. Pneumoperitoneum present. Right lobe of liver widely adherent to diaphragm. Dense homogeneous mass involves right lower lung field.

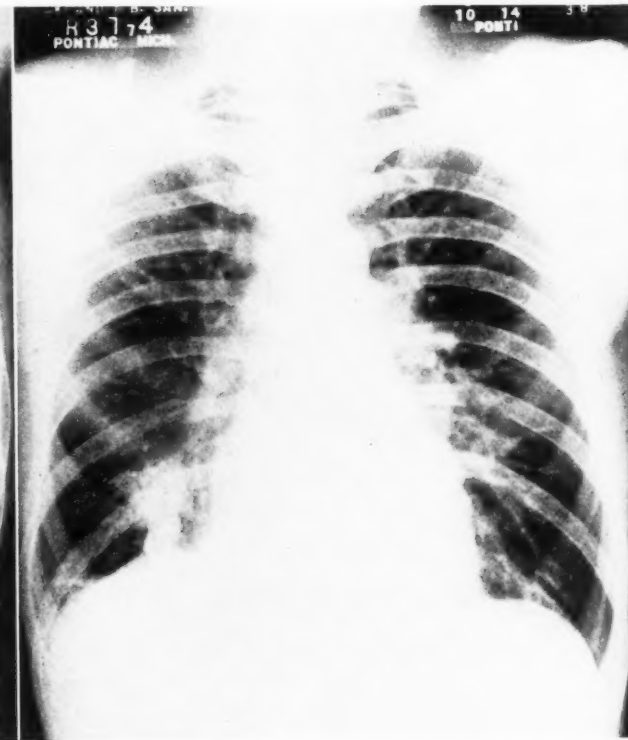


Fig. 4. Case 1. October 14, 1938. Complete clearing of former density at right base except for opacity due to retained lipiodol.

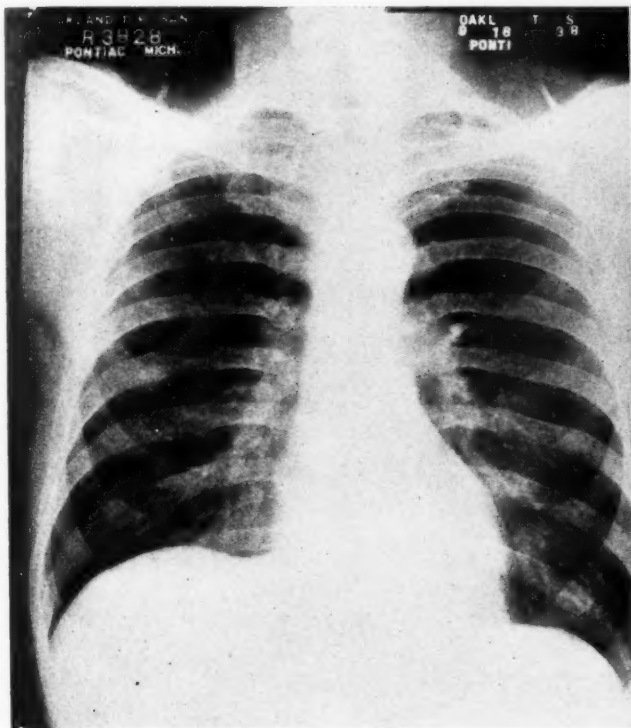


Fig. 5. Case 2. September 16, 1938. Both lung fields clear. Slight elevation of right diaphragm.



Fig. 6. Case 2. September 29, 1938. Pneumoperitoneum. Right lobe of liver widely adherent to diaphragm. Marked enlargement of liver and elevation of right diaphragm.

The physical examination, aside from evidence of weight loss, was within normal limits. The chest roentgenograms were clear. Direct smears, concentrates and cultures of the sputum were negative for tubercle bacilli. Bronchoscopic and lipiodol studies were negative. Three stool examinations were negative for amebæ. The sedimentation rate (Westergren) was 105 mm. The blood Kahn was negative. A pneumoperitoneum showed the liver to be widely adherent to the right diaphragm and the flat film of the abdomen suggested an enlarged liver. The icteric index was 3 and 8 on two occasions. There was a moderately severe secondary anemia and a moderate leukocytosis.

A diagnosis of amebic abscess of the liver was made. During the two months prior to admission he had received continuous specific therapy to the point of toxicity. It was felt that further administration of emetine was contraindicated for the time being. During the next six weeks he improved clinically, but the fever ranging from 99 to 103.6 persisted. In November emetine was again given, alternating with stovarsol. Within thirty-six hours his temperature was normal and remained so for twelve days. Three courses were given. The last course failed to bring about any change. Daily fever persisted. Roentgenograms of the chest one month after admission showed the right diaphragm to be elevated two interspaces. Toward the end of the third month he complained of palpitation and dyspnea at rest. Examination revealed auricular fibrillation, confirmed by electrocardiogram. There was no edema. He was digitalized. Surgical intervention was advised, but

he returned home January 13, 1939. His condition grew worse. During the first week in March, 1939, he became critically ill and was admitted to a large general hospital in Detroit, where he died March 11, 1939. An autopsy was performed. The pertinent findings are given here.

The liver margin extended 15 cm. below the coastal margin. The right dome of the diaphragm reached the level of the third intercostal space. The heart was normal. The right lung weighed 920 gms. The right lower lobe was large, consolidated and airless. The cut surface was granular and microscopically the picture was that of a lobar pneumonia. There was no gross or microscopic evidence of tuberculosis. The liver weighed 5,200 gms. and was enormously enlarged by a bulging mass occupying the entire right lobe. A quantity of thick creamy, gelatinous matter was aspirated from this large solitary abscess which measured 20 cm. in diameter. After removal of the cyst the liver weighed 2,720 gms. Sections from the abscess wall showed amebæ. No ulceration of the gastrointestinal tract was found and no amebæ seen in sections of the large bowel.

Comment

Amebiasis is a widespread and common disease. Liver abscess is the most common complication of the disease, but it is less generally appreciated that pleuro-pulmonary complications are frequently present but often not recognized

during life. Thirteen per cent of cases of amebiasis develop pleuro-pulmonary complications.

There is no other known type of abscess of the lung that responds at once so dramatically to specific therapy as does amebic abscess. If the diagnosis is suspected and the amebæ are not found, a therapeutic trial of emetine and stovarsol will bring about an astounding improvement if amebiasis is present.

Not all cases of amebiasis with liver abscess are cured by specific therapy. The usual initial response to treatment may be obtained, but may be followed by relapse in spite of adequate treatment. This is illustrated by our second case, in which an unusually large solitary amebic liver abscess was found at autopsy. It is evident that surgical drainage should have been done when the early response was followed by relapse.

Amebiasis should be considered in the differential diagnosis in every lung abscess of the lower half of the right lung. If there is no clear history suggesting amebiasis, diagnostic studies should include the induction of pneumoperitoneum. This procedure gives reliable evidence of any attachment between the right lobe of the liver and the right hemidiaphragm, as well as the actual size of the liver. Amebic abscess of the liver is practically always located in the right lobe. If this evidence is suggestive, specific therapy is justified and indicated. Our first case illustrates the dramatic response to treatment. A tentative diagnosis of pulmonary tuberculosis had been made in both cases before admission to the sanatorium.

Conclusions

1. Two cases of amebic liver abscess with pleuro-pulmonary symptoms and complications are presented.
2. One case of lung abscess due to amebiasis is discussed.
3. The difficulties in the diagnosis are outlined.
4. Treatment with emetine and stovarsol frequently results in a dramatic cure, as in the first case discussed.
5. A case of large solitary amebic liver abscess without evident pulmonary disease but characterized by distressing cough, sputum and dyspnea is presented.

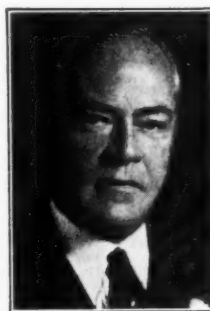
6. When emetine and stovarsol and related drugs fail in a known case of amebiasis, the possibility of a large solitary abscess must be considered and surgical drainage undertaken.

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Vitamin and Mineral Requirements in Pregnancy*

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the Council on Medical Education and Hospitals of the A.M.A.

- AN adequate diet is one which contains a sufficient quantity of the factors necessary for proper growth, maturation, reproduction, and maintenance of good health. The very definition of an adequate diet, therefore, takes into consideration the state of pregnancy and associates intimately the possibility of deficiency disease with pregnancy.

The inability of a patient to satisfy her bodily nutritional needs may arise in many ways, but for clinical purposes, such patients may be placed in one of three categories. The first includes those ingesting inadequate quantities of one or more of the essential dietary factors. This may arise from many causes; for example, economic difficulties, faddism in diet, psychic states, dys-

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pepsia, and anorexia due to disease. The second comprises those ingesting these factors in amounts which are usually adequate, but with the presence of some disease within the body which interferes with their proper utilization. The development of pellagra in chronic amebiasis and of hemorrhage in obstructive jaundice are examples of such states. The third comprises those receiving an inadequate intake of the essential dietary factors because of acutely or suddenly changed requirements. While this group is really a subdivision of the first above, clinically it is well to consider it as a separate division, for the usual normal diet may be taken, but the bodily requirements have changed.

A person may have ingested and utilized a diet which, for long periods of time, has been adequate, at least to prevent the development of symptoms. Then, some new state, such as hyperthyroidism, tuberculosis, or pregnancy, may appear and increase the need for certain dietary factors without sufficiently increasing, or at times actually decreasing, the appetite and desire for food. The individual may continue to ingest the diet previously taken and previously adequate, a diet which for the new state is no longer adequate and symptoms and evidences of subnutrition may arise.

In pregnancy the patient may fall into any one or all three of these categories either from incidental conditions or those directly related to the pregnancy itself. The dangers of the third group are always present, and those of the first and second frequently develop. Increased requirements without increased desire to raise the intake of food is operative to some extent in all pregnancies whether normal or abnormal. Pregnancy itself may, for reasons not always clear, change the patient's desire for food, or cause the development of unusual dislikes and cravings, which may eventuate in an inadequate diet. Toxemic states may do the same thing. Inadequate utilization of an adequate diet again may arise not only from incidental causes but directly from the pregnancy; toxemia and vomiting of pregnancy, for example.

It is clear that in all pregnancies the physician must be on the alert for dietary deficiency. A careful dietary regimen must be

carried out by the pregnant woman in order to prevent the occurrence of deficiency disease.

The specific dietary needs of the body are not entirely known, but in general the known requirements may be listed as follows: (1) calories, (2) protein, (3) water, (4) minerals, (5) vitamins. Palatability, satiety value, proper residue, and digestibility are also important. All of these groups require consideration in the diet of the pregnant woman.

Caloric Needs

Caloric needs are supplied by carbohydrates, fats, and to some extent by proteins. In adults these requirements are usually judged by the physician and patient by the body weight. The dietary is adjusted to bring the patient's weight to optimum levels, and when so adjusted intake is maintained at a level necessary to maintain the weight. In pregnancy, however, there is a physiologic gain in weight, and caloric intake must be increased to take care of this increased requirement. With a tendency toward obesity and with advice to "eat plenty," including milk and other high calorie food, the patient may gain weight excessively, and only too frequently a gain in weight persists after delivery. The cause for such persistence is not clear and may lie in changed endocrine relationships, but it is only too true that many women increase in weight with each succeeding pregnancy.

One may ask what the normal weight gain in pregnancy is, in order that the woman may adjust her caloric intake on the basis of weight gain. Dieckmann and Brown⁶ have found the average weight increase in pregnancy to be 9.7 kg. (21 pounds) with a standard deviation of 4.3. In treating a woman whose weight is optimum at conception, Dieckmann and Swanson⁷ restrict total weight gain to 7.5 kg. (16.5 pounds), which is equivalent to the weight of the fetus, placenta, amniotic fluid, and the maternal physiologic changes. Weight increases little in the first trimester when growth of the fetus is small. As pregnancy progresses to the second and third trimesters, increased demands of the fetus are apparent. This is reflected in many ways, such as the rise in the basal metabolic rate⁸ which progressively increases through these two periods. In the last trimester the fetus practically triples in weight. In the second tri-

mester definite weight gains appear, approximately 0.5 pound per week, to increase to 2 or more pounds per week in the third trimester. As labor approaches, there is generally a loss in weight. From the second trimester on, particularly at the fourth to fifth month, the diet must be increased and carefully balanced to take care of the caloric needs as well as the increased protein, vitamin, and mineral requirements. In the underweight patient, weight gains exceeding those stated above are desired, the amount exceeding 20 pounds depending to some extent upon the degree of subnutrition.

No discussion will be given here concerning the use of carbohydrates as the basis for certain patterns of treatment in vomiting and toxemia of pregnancy.

Although the basal metabolism returns to normal levels following delivery, the caloric demands of the mother continue at a high level, even somewhat higher than in pregnancy itself, because of the production of milk. In the human, the caloric value of milk approximates 700 calories per 1,000 cc. In addition, an adequate intake of other nutritional elements entering milk must be supplied. These will be mentioned below. Likewise, certain nutritional factors are deemed necessary to stimulate an adequate production of milk, particularly fats, protein, vitamin B, and adequate fluids up to certain limits.

Proteins

Proteins supply the nitrogenous products, amino acids, essential to the structure of cells. They are important in water balance as well. In pregnancy adequate protein intake is thought also to increase milk production and prevent the development of certain anemias. Inadequate protein intake in pregnancy has been suggested by the group at Ann Arbor as the cause of mild, and possibly also severe, macrocytic anemia in pregnancy.¹ Excluding pregnancy, protein requirements are usually given as $\frac{2}{3}$ to 1 gm. per kilogram body weight per day. The value varies with the quality of the protein, that of animal source, gelatin excepted, usually supplying the essential amino acids with greater abundance than that of vegetable origin. A large group of individuals of average means in this country ingests up to 100 gm. of protein daily, a more than adequate supply. But a large group of individu-

als of limited means receives an inadequate or borderline intake of proteins. Inexpensive diets are essentially carbohydrate diets, and the restriction of lean meats, fowl, fish, eggs, and milk in the diet leads to protein inadequacy. In pregnancy such patients face an added shortage, for fetal and uterine growth, as well as other changes in the maternal organism, increase the nitrogen requirements, and increase, therefore, the daily protein requirements. There are estimates that 2,200 to 2,800 gm. of protein are stored in pregnancy. One finds estimates of daily needs ranging from 70 to 119 gm. In comparison with the usual requirement of $\frac{2}{3}$ to 1 gm. per kilogram body weight for the average individual, the pregnant woman would need 1.5 up to possibly 2 gm. from the fifth month on. In the period of lactation a high protein intake is considered of particular importance not only because of protein needs in milk, but to stimulate milk production.

Manipulation of the protein intake in control of toxemias of pregnancy is merely mentioned here to emphasize the fact that protein restriction and feeding play a part in the pathologic as well as in the physiologic needs of pregnancy.

Water

Changes in water balance occur physiologically in pregnancy. The hydremia, resulting in reduced hemoglobin and erythrocyte values, is well known. However, adequate supplies of water are usually of little concern in physiologic states because of free access to it. The same is true of pregnancy unaccompanied by pathologic conditions. The pregnant woman is usually admonished, however, to drink plenty of water, particularly in the later stages of pregnancy, for water intake at that time is thought to be important in the quantity of milk supplied in lactation.

Minerals

Mineral substances perform bodily functions essential to life and to proper nutrition. Many of the minerals necessary in small amounts are widely distributed in nature and occur in sufficient abundance to make them of little clinical importance except in rare instances. This is true of copper, zinc, aluminum, magnesium, cobalt, and nickel. Others, however, such as calcium, phosphorus, iron, and iodine, are often required in quantities which exceed the supply and

become of extreme clinical importance. This is particularly true in pregnancy where requirements are increased, for the fetus must obtain all its mineral needs from the mother.

Calcium and Phosphorus.—Clinical examples indicate only too clearly that the fetus exerts its demands upon the mother for calcium and phosphorus even in the face of marked deficiency in the mother. Adequate maternal supplies⁵ produce highest grades of fetal bone calcification. Deficient calcium supplies in the diet, together with deficient maternal stores, lead not only to demineralization of the maternal bones with osteomalacia¹³ but may eventuate in fetal rickets. Outside pregnancy, the daily calcium and phosphorus requirements are usually given as 1 to 1.5 gm. and 0.9 gm., respectively. In pregnancy, the respective estimates are 1.3 to 1.8 and 1.4 to 2.0 gm. These requirements are felt in the latter half of pregnancy. The newborn contains 24 to 30 gm. of calcium and 14 gm. of phosphorus, over half of which is deposited in the last two months.⁹ Any remarks concerning calcium and phosphorus requirements postulate an adequate source of vitamin D (q. vide).

The best dietary sources of calcium and phosphorus are milk and milk products. A quart of milk contains 1.2 gm. of calcium and 0.9 gm. of phosphorus. Phosphorus sources are adequate in most dietaries in this country. Important sources other than milk include beans, egg yolk, cheese, whole wheat, beef, oatmeal, nuts, and prunes. Calcium sources are often deficient, however. Aside from milk, other foods high in calcium include egg yolk, molasses, clams, certain greens, such as dandelion and turnip tops, figs, filberts, and almonds. Green vegetables contain fair amounts, but much of their calcium is not in utilizable form because of the presence of oxalates. Milk and milk products stand out, therefore, as the chief dietary sources, and at least a quart per day should be included in the dietary of the pregnant woman, even if calcium salts are added. The latter, if used, should be given in large dosage before meals or with dilute hydrochloric acid.

During the period of lactation at least one quart of milk, and preferably a quart and a half, should be ingested daily along with a diet adequate from other standpoints to insure

a supply of calcium and other minerals. Even under these circumstances, without cod liver oil, positive calcium balance may be impossible.

Iron.—The daily iron requirement for the average adult is usually placed at 15 mg. This same figure has been given for pregnant women,⁴ but others have found higher values necessary.¹¹ The fetus draws upon the mother for the necessary iron for hemoglobin production and requires, it is estimated,^{1,8} 250 to 500 mg., most of which is taken into the fetus in the last trimester. Since the fetus takes its requirement for blood formation despite a deficiency in the mother, the mother will become anemic and the child will be born with normal red blood cell and hemoglobin values for the newborn. However, the child may not, under those circumstances, store the supply of iron needed for the first year of life and may develop anemia before the end of the first year. With inadequate maternal supply of iron, one may see that fetal demands hasten the development of iron deficiency anemia in the mother, and repeated pregnancies, particularly, may be important in the development of anemia.

When allowance is made for the hydremia of pregnancy, already discussed, anemia, particularly of the hypochromic variety, is very common. Although it occurs frequently in all economic groups, indicating the existence of causative factors other than dietary intake, it definitely varies with the economic status. One of the factors operative in all economic groups is the reduction in gastric acidity in many patients, which, it is thought, interferes with the proper absorption of iron.

The well-rounded diet, particularly with lean meat, parenchymatous organs, such as liver and kidney, eggs, and leafy vegetables, supplies adequate iron without the necessity of added iron salts. Other foods rich in iron include dates, figs, prunes, oatmeal, raisins, molasses, legumes, and other fruits, particularly apricots, prunes, and peaches. Doubtful intake of iron-containing foods is an indication for blood check-ups, which should be done routinely on several occasions during pregnancy in any event. Where correction of the diet cannot be relied upon, and where hypochromic anemia develops as a result of defective absorption in spite of apparently adequate intake, addition of iron salts is indicated.

mester definite weight gains appear, approximately 0.5 pound per week, to increase to 2 or more pounds per week in the third trimester. As labor approaches, there is generally a loss in weight. From the second trimester on, particularly at the fourth to fifth month, the diet must be increased and carefully balanced to take care of the caloric needs as well as the increased protein, vitamin, and mineral requirements. In the underweight patient, weight gains exceeding those stated above are desired, the amount exceeding 20 pounds depending to some extent upon the degree of subnutrition.

No discussion will be given here concerning the use of carbohydrates as the basis for certain patterns of treatment in vomiting and toxemia of pregnancy.

Although the basal metabolism returns to normal levels following delivery, the caloric demands of the mother continue at a high level, even somewhat higher than in pregnancy itself, because of the production of milk. In the human, the caloric value of milk approximates 700 calories per 1,000 cc. In addition, an adequate intake of other nutritional elements entering milk must be supplied. These will be mentioned below. Likewise, certain nutritional factors are deemed necessary to stimulate an adequate production of milk, particularly fats, protein, vitamin B, and adequate fluids up to certain limits.

Proteins

Proteins supply the nitrogenous products, amino acids, essential to the structure of cells. They are important in water balance as well. In pregnancy adequate protein intake is thought also to increase milk production and prevent the development of certain anemias. Inadequate protein intake in pregnancy has been suggested by the group at Ann Arbor as the cause of mild, and possibly also severe, macrocytic anemia in pregnancy.¹ Excluding pregnancy, protein requirements are usually given as $\frac{2}{3}$ to 1 gm. per kilogram body weight per day. The value varies with the quality of the protein, that of animal source, gelatin excepted, usually supplying the essential amino acids with greater abundance than that of vegetable origin. A large group of individuals of average means in this country ingests up to 100 gm. of protein daily, a more than adequate supply. But a large group of individu-

als of limited means receives an inadequate or borderline intake of proteins. Inexpensive diets are essentially carbohydrate diets, and the restriction of lean meats, fowl, fish, eggs, and milk in the diet leads to protein inadequacy. In pregnancy such patients face an added shortage, for fetal and uterine growth, as well as other changes in the maternal organism, increase the nitrogen requirements, and increase, therefore, the daily protein requirements. There are estimates that 2,200 to 2,800 gm. of protein are stored in pregnancy. One finds estimates of daily needs ranging from 70 to 119 gm. In comparison with the usual requirement of $\frac{2}{3}$ to 1 gm. per kilogram body weight for the average individual, the pregnant woman would need 1.5 up to possibly 2 gm. from the fifth month on. In the period of lactation a high protein intake is considered of particular importance not only because of protein needs in milk, but to stimulate milk production.

Manipulation of the protein intake in control of toxemias of pregnancy is merely mentioned here to emphasize the fact that protein restriction and feeding play a part in the pathologic as well as in the physiologic needs of pregnancy.

Water

Changes in water balance occur physiologically in pregnancy. The hydremia, resulting in reduced hemoglobin and erythrocyte values, is well known. However, adequate supplies of water are usually of little concern in physiologic states because of free access to it. The same is true of pregnancy unaccompanied by pathologic conditions. The pregnant woman is usually admonished, however, to drink plenty of water, particularly in the later stages of pregnancy, for water intake at that time is thought to be important in the quantity of milk supplied in lactation.

Minerals

Mineral substances perform bodily functions essential to life and to proper nutrition. Many of the minerals necessary in small amounts are widely distributed in nature and occur in sufficient abundance to make them of little clinical importance except in rare instances. This is true of copper, zinc, aluminum, magnesium, cobalt, and nickel. Others, however, such as calcium, phosphorus, iron, and iodine, are often required in quantities which exceed the supply and

become of extreme clinical importance. This is particularly true in pregnancy where requirements are increased, for the fetus must obtain all its mineral needs from the mother.

Calcium and Phosphorus.—Clinical examples indicate only too clearly that the fetus exerts its demands upon the mother for calcium and phosphorus even in the face of marked deficiency in the mother. Adequate maternal supplies⁵ produce highest grades of fetal bone calcification. Deficient calcium supplies in the diet, together with deficient maternal stores, lead not only to demineralization of the maternal bones with osteomalacia¹³ but may eventuate in fetal rickets. Outside pregnancy, the daily calcium and phosphorus requirements are usually given as 1 to 1.5 gm. and 0.9 gm., respectively. In pregnancy, the respective estimates are 1.3 to 1.8 and 1.4 to 2.0 gm. These requirements are felt in the latter half of pregnancy. The newborn contains 24 to 30 gm. of calcium and 14 gm. of phosphorus, over half of which is deposited in the last two months.⁹ Any remarks concerning calcium and phosphorus requirements postulate an adequate source of vitamin D (q. vide).

The best dietary sources of calcium and phosphorus are milk and milk products. A quart of milk contains 1.2 gm. of calcium and 0.9 gm. of phosphorus. Phosphorus sources are adequate in most dietaries in this country. Important sources other than milk include beans, egg yolk, cheese, whole wheat, beef, oatmeal, nuts, and prunes. Calcium sources are often deficient, however. Aside from milk, other foods high in calcium include egg yolk, molasses, clams, certain greens, such as dandelion and turnip tops, figs, filberts, and almonds. Green vegetables contain fair amounts, but much of their calcium is not in utilizable form because of the presence of oxalates. Milk and milk products stand out, therefore, as the chief dietary sources, and at least a quart per day should be included in the dietary of the pregnant woman, even if calcium salts are added. The latter, if used, should be given in large dosage before meals or with dilute hydrochloric acid.

During the period of lactation at least one quart of milk, and preferably a quart and a half, should be ingested daily along with a diet adequate from other standpoints to insure

a supply of calcium and other minerals. Even under these circumstances, without cod liver oil, positive calcium balance may be impossible.

Iron.—The daily iron requirement for the average adult is usually placed at 15 mg. This same figure has been given for pregnant women,⁴ but others have found higher values necessary.¹¹ The fetus draws upon the mother for the necessary iron for hemoglobin production and requires, it is estimated,^{1,8} 250 to 500 mg., most of which is taken into the fetus in the last trimester. Since the fetus takes its requirement for blood formation despite a deficiency in the mother, the mother will become anemic and the child will be born with normal red blood cell and hemoglobin values for the newborn. However, the child may not, under those circumstances, store the supply of iron needed for the first year of life and may develop anemia before the end of the first year. With inadequate maternal supply of iron, one may see that fetal demands hasten the development of iron deficiency anemia in the mother, and repeated pregnancies, particularly, may be important in the development of anemia.

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Iodine.—In areas in which iodine deficiency in the ground water exists, the use of the usual measures for prophylaxis current in those areas, such as the use of iodized salt, suffices in pregnancy and may be necessary to prevent the occurrence of goiter in the newborn.

Vitamins

The vitamins of known clinical importance are vitamins A, B₁, certain fractions of the B₂ complex, C, D, possibly E, and K. All of these have clinical aspects of direct importance in pregnancy. Increased requirements are known for all in which sufficiently accurate estimates of needs have been made.

In the first half of pregnancy, little concern need be given the requirements above those usually necessary. However, in the latter half of pregnancy, requirements are greatly elevated and this increased need is carried into the lactation period, as will be indicated below.

Vitamin A.—Vitamin A is essential for proper growth, proper vision, and the maintenance of healthy epithelial structures. In experimental animals, changes in the urogenital epithelium have led to difficult labor in the female and to degeneration of the testes in the male. Premature labor, stillbirth at term, deficient milk supply in the mother, diarrhea in the newborn, and death of the young, have also been observed in animals. In contrast to such marked deficiency produced experimentally, humans show generally moderate deficiency and the effects on human reproduction of such grades of deficiency as seen clinically are not known. Equivocal results have been reported in the treatment of human sterility with vitamin A.³

The daily requirement of vitamin A for adults is probably around 3,000 to 4,000 I. U. These amounts are doubled for children and pregnant women. The League of Nations Commission recommends 8,700 to 9,000 I. U. for pregnant women. Many estimates of the daily requirement have been made on the basis of the dark adaptation test, which is not universally accepted as a satisfactory method for such measurements.

Since the average diet is often not satisfactory for ordinary needs, it is evident that the doubled requirement in the latter half of pregnancy is not likely to be met by this

means. Special efforts must be made to include in the diet foods high in vitamin A, such as greens, sweet potatoes, cream, cheese, egg yolk, carrots, corn, squash, liver, apricots, and peaches. Rancid fats destroy vitamin A and the precursor, carotene. Their importance in food storage is unknown, but vegetables are best cooked rapidly without fat meat. Supplements are desirable. Fish liver oils are commonly used and supply vitamin D as well. Carotene concentrates may be used. The presence of chronic infections, such as tuberculosis, or liver disease, and chronic diarrhea, increases the need for such concentrates.

In circumstances in which vitamin A deficiency is likely, and pregnancy certainly is one, care must be used in the administration of mineral oil. As shown at Ann Arbor, mineral oil interferes with absorption of carotene even when given in doses as small as 20 c.c. twice daily before meals, but, when necessary, may be given safely as a single dose at bedtime or when vitamin A is used as a source of the vitamin.

It has been pointed out¹⁴ that marked vitamin A deficiency in pregnancy may simulate toxemia and that treatment with vitamin A produces dramatic results.

The increased vitamin A requirements do not stop with delivery. The mother's milk contains considerable quantities of vitamin A which, of course, must be added to the usual amounts necessary for the mother's normal bodily functions at that time. The vitamin A content of mother's milk has been shown to vary with the mother's intake, but is without relationship to the fat content. The average vitamin A content has been found to be 300 I. U. per 100 c.c., which for 800 c.c. per day, would total 2,400 I. U. The need for a continued large supply for the mother in the period of lactation is evident.

Vitamin B₁.—Here again, the daily requirement of this vitamin is markedly affected by pregnancy. The League of Nations Committee recommends 10 I. U. per 100 calories for adults, increased to 20 to 30 I. U. in pregnancy. Other estimates include 1 mg. (333 I. U.) for each 3,700 non-fat calories. Clinical evaluations of the American diet indicate that many people live on diets borderline in vitamin B₁ adequacy. Since pregnancy increases the requirement, and may

at times predispose to a reduced intake, one can see that vitamin B₁ deficiency is not unlikely in pregnancy, and so-called gestational polyneuritis is considered by some to be almost exclusively an expression of B₁ deficiency. One often thinks of beriberi as a rare or unusual disease, but if there is included in the syndrome those patients in whom the diagnosis is masked by such terms as gestational, diabetic, alcoholic, or metabolic neuritis, and the polyneuritic manifestations of sprue, celiac disease and pellagra, one sees that beriberi is not infrequent.

One should not wait for gestational polyneuritis, however, to suspect vitamin B₁ deficiency in pregnancy. The dietary history may be helpful and, as with many of the other vitamins of clinical importance, there are vague symptoms and signs which occur in lesser degrees of deficiency. Mild deficiency is by far the most frequent, although usually not characteristic enough to lead to a diagnosis on the basis of symptoms alone. These symptoms, which include burning paresthesias of the feet, heaviness and tenderness of the extremities, ease of fatigue, pains, reflex changes, anorexia, dyspepsia, and constipation, may lead to erroneous diagnoses, such as neurasthenia, and with the variety of vague complaints to which the pregnant woman is heir, may be lightly dismissed as "natural" or "to be expected in pregnancy."

The other vitamin deficiencies in their earlier stages also produce non-specific features, and we want to emphasize a consideration of these symptoms in the light of malnutrition, for it is only by considering the possibility of malnutrition that their nature may be recognized and proper treatment instituted.

With increased requirements of vitamin B₁, treatment of mild deficiency, or its prevention, consists of the elimination of vitamin poor foods, such as crackers, pastries, candy, syrup, and rice, from the diet, and the addition of thiamin rich foods, such as seeds, lean pork, milk, liver and other internal organs. Cooking methods destroy some vitamin B₁. Where doubt arises as to an adequate intake of vitamin B₁, supplements of brewers' yeast or aqueous liver extract may be given as well as the purified vitamin.

Again, lactation maintains the requirement of

vitamin B₁ at high levels. In rats, requirements as high as five times usual maintenance doses have been found necessary in the nursing mother. The vitamin B₁ content of mother's milk is in the large part responsible. The vitamin B₁ content of human mother's milk varies with the intake through certain ranges, and study¹² shows that levels above 25 gamma per 100 gm. are not obtained by excessive dietary feeding.

Other Vitamin B Elements.—*Riboflavin* and *nicotinic acid* are of known clinical importance. Aspects of riboflavin deficiency related to human pregnancy have not been worked out to the authors' knowledge. One would assume that the requirement is probably elevated, but the requirement outside pregnancy has not been settled as yet. Nicotinic acid deficiency results in pellagra. Although the Thompson-McFadden Pellagra Commission found in a study in Spartanburg County, South Carolina, that the onset of pellagra was relatively less frequent during pregnancy than at other times, in the early months following delivery the incidence was excessive. Records of others indicate that pellagra has been precipitated by pregnancy and an increased requirement of nicotinic acid is likely, although details are not known. While the treatment of pellagra is commonly carried out with nicotinic acid, the possibility of the presence of multiple deficiency demands an adequate diet from all standpoints, concentrates rich in all factors of the B complex, such as liver, liver extracts and brewers' yeast; and foods rich in the B complex.

Pernicious vomiting of pregnancy is said to have been successfully treated with preparations of the entire B complex.

Vitamin C.—Vitamin C, or ascorbic acid, is necessary for certain tissue respiratory functions, and for the proper formation and maintenance of intercellular substances, which accounts for the hemorrhage and bone changes in deficiency. Some have suggested that vitamin C deficiency interferes with normal conception and acts as a contributory cause of spontaneous abortion. The daily requirement for normal adults is not known. Estimates vary from 10 to 100 mg. daily, averaging about 50 mg. (1,000 I. U.). It is raised in conditions with elevated metabolism, such as hyperthyroidism, pregnancy, lactation, and infectious diseases, as well as in gastroin-

testinal disease. In pregnancy estimates of daily needs vary from 75 to 100 mg.

Such symptoms as mental sluggishness, weakness, gingivitis, ease of fatigue, muscle and joint aches, anorexia, and anemia, are more common than frank, classical scurvy, symptoms which, in part at least, are common in normal pregnancy.

However, scurvy has been seen to develop in pregnancy. Vitamin C is thought to have a function in the healing of surgical wounds, which may be of importance in the healing of the injuries of labor.

Vitamin C requirements can usually be supplied satisfactorily by the diet. Such vitamin C rich foods as citrus fruits and juices, green peppers, strawberries, and many greens, are the chief sources. Citrus fruits and tomatoes stand out as readily available sources. With proper canning and preserving, the vitamin content is maintained for long periods of time. Prophylactically, such foods are sufficient in pregnancy. For active treatment in severe deficiency, purified preparations, at times parenterally, may be necessary.

Increased requirements of vitamin C continue through lactation. Human milk has been found to contain approximately 5 mg. ascorbic acid per 100 c.c., so that for a daily secretion of 800 c.c. milk, 40 mg., equal to the usual average maintenance dose, are necessary in addition to the mother's usual needs. The vitamin C content of human milk varies with the dietary intake and is four to five times that of cow's milk.

Vitamin D.—In infancy, vitamin D deficiency results in rickets; in the adult, in osteomalacia. Symptoms of osteomalacia are few. Irritability, undue sweating, pain in the lower back, and stiffness of the legs are common complaints. The child may be born with evidences of calcium, phosphorus, and vitamin D deficiency. Both rickets and osteomalacia may be produced by other factors which change the relationships of calcium and phosphorus metabolism. In the discussion on calcium and phosphorus it was stated that an adequate vitamin D supply was presupposed. Here, in discussing vitamin D, an adequate intake of calcium and phosphorus is presupposed, for added vitamin D does not insure

retention of calcium with intakes below 1.4 to 1.6 gm. daily.¹⁰

The daily requirement of vitamin D is not definitely known. In infants, 135 to 400 I.U. are minimum and should be exceeded. In adults, the requirement is unknown, for vitamin D is formed in the body by solar irradiation of the skin. In pregnancy, the requirement is elevated. Chief sources are irradiation and the diet. Foods rich in vitamin D are egg yolk, fish roe, liver, herring, sardines, and canned salmon. Use of cod liver oil or similar preparations is not generally routine in pregnancy, but in many instances should be advised in at least teaspoon doses, or solar irradiation used instead. This is especially true in frequent pregnancies for poor retention of calcium and phosphorus may result, regardless of intake, unless vitamin D is also given.¹⁰ Vitamin D is strongly advised in all pregnancies and in lactation as well.

Calcium and phosphorus are necessary for milk production and vitamin D requirements remain elevated during lactation. Milk intake has been suggested in amounts as large as 1.5 quarts per day at this time, but even then relatively few women can prevent calcium loss without added vitamin D.¹⁰ This is even more true with rapidly succeeding pregnancies and lactation. Doses of 800 I.U. or more of vitamin D are suggested.

It should also be remembered that old vitamin D deficiency of infancy may be important to the patient after reaching maturity and becoming pregnant, for maldevelopment of the pelvic bones from rickets in infancy may lead to difficult labor.

Vitamin E.—Vitamin E, identified as alpha-tocopherol, is known to be necessary for fertility and successful gestation in rats. There is no direct proof that clinical deficiency produces such an effect in man. The vitamin is widely distributed in nature, occurring in yeast, animal tissues, germs of seeds, and particularly in lettuce and other green vegetables.

There are many reports of successful treatment of functional sterility and habitual abortion in the human, so that when this does take place, a trial of the vitamin is justified, although the Council on Pharmacy and Chemistry of the American Medical Association has not found sufficient proof to accept preparations for such use.

Reports indicate that the use of wheat germ oil, the usual preparation, in habitual abortion, is attended by successful outcome in 75 to 80 per cent of the cases. Yet similar results have been obtained by other methods of treatment, such as progestin and vitamin C, and in one report, the spontaneous cure rate without any treatment was 78.4 per cent after one abortion.² Such results indicate that the efficacy of vitamin E in these patients remains to be established.

Recent reports of the use of vitamin E in the treatment of muscular and nervous disorders have thus far indicated no relationship to human pregnancy.

Vitamin K.—Vitamin K is essential to the proper formation of prothrombin, and a deficiency of the vitamin results in impaired prothrombin formation, impaired clot formation in the blood, and, finally, hemorrhage. Vitamin K occurs in considerable amounts in alfalfa, kale, spinach, dried carrot tops, tomatoes, oat sprouts, egg yolk, soy bean oil and some other vegetable oils. Bile is necessary for its proper absorption, and this accounts for impaired absorption in obstructive jaundice, eventuating in lowered blood prothrombin values and hemorrhage. Hemorrhagic disease of the newborn has been found to occur upon the basis of vitamin K deficiency¹⁵ and is corrected by the administration of concentrates of the vitamin or synthetic preparations, such as 2-methyl-1, 4-naphthoquinone, in 1.0 mg. doses with 5 to 10 grains of animal bile salts. In the newborn without hemorrhagic phenomena, the prothrombin time is often prolonged, particularly from the second to the fifth day. Interestingly enough, this tendency may be corrected not only by administration of vitamin K and bile salts to the child, but by their administration to the mother at the beginning of, or early in, labor.

Summary

We have presented a short sketch of the known facts concerning the nutritional needs of the mother when first she is carrying the baby in utero and later when she is suckling it. We would emphasize strongly the necessity of an ample, well-rounded diet in order to preserve the well-being of the pregnant woman, and in order to have her give birth to a healthy child.

APRIL, 1941

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Appendicitis

The Problem from an Educational Standpoint

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■ Some ten thousand articles on appendicitis are to be found in medical literature. Three interesting statements appear, as a rule, in the majority of recent publications on the subject. (1) There are about 20,000 deaths annually from the disease. (2) Eighty per cent of the deaths are due to generalized peritonitis. (3) There could be a 75 per cent reduction in mortality if patients were seen early enough and the proper treatment immediately instituted. These three statements formulate a challenge which we as a profession must face. There are two aspects to the problem. One involves lay education which is now being carried on in an ever increasing volume by means of radio, public lectures, and

to some extent through our schools. The second aspect is that of the availability of efficient medical care.

The increasing death rate from appendicitis suggests that organized medicine may well seek further avenues through which the simple important facts of health and disease may be brought to the public. From this standpoint, appendicitis is one of many important common diseases of which more should generally be known. While it is true that we cannot overlook the fine efforts already operative, yet we as medical men note too long an interval between the inception of the disease and medical consultation. Likewise, abusive ingestion of cathartics and complete lack of suspicion of the possibility of appendicitis by the laymen clearly indicate a need for some more effectual approach to our problem.

A Proposal

Our schools provide an excellent medium through which health education may be extended. This in itself is not a new idea but one whose possibilities have not been fully utilized. Well-designed programs of preventive medicine are now doing excellent work. A simple course in the lower grades and junior high schools, teaching simple rules and precautions about health and diseases, would not only have great intrinsic interest but would undoubtedly save many lives. Too many grade, high school and college graduates possess insufficient general medical information to protect themselves against tragedies, such as ruptured appendix. A recent survey by the United States Office of Education showed that less than 10 per cent of college students, other than medical students, had taken any courses pertinent to health or hygiene.

Curricula ought therefore recognize that general medical information, sufficient to make the individual intelligently concerned about his body as he is about his mind, is necessary. To be sure there are now a few courses which may be elected by the student. In other instances courses in hygiene, etc., are required. These are, however, altogether too limited in scope. A great job in public health education could be accomplished if there were compulsory courses in grade schools, high schools and in colleges which went beyond the usual physiologic and hygienic limitations. A more intelligent public

would undoubtedly bring the patient to his physician earlier. The effect on mortality rates generally would be apparent over an adequate period of time. As physicians and guardians of the health of the public, it is our duty to see that adequate courses are outlined and also that state and local educational boards be duly petitioned. This should, of course, be sponsored by our State Medical Society assisted by local County Societies.

The Second Consideration

From the standpoint of the operating surgeon no plea for a broader educational effort, designed to effect an earlier recognition of appendicitis, could possibly be considered effectively stated without a word as to the responsibilities of the corner druggist and finally the physician himself.

Too often the appendicitis patient presents himself first to our friend the druggist whom he induces to give him something for "stomach ache." And too often the something he procures is not advice to see his family physician, but some form of catharsis. Unquestionably all of us have encountered time and again cases of drug store meddling of this nature. As physicians, it is our explicit duty to duly censor such practices and emphatically discourage this form of prescribing. No doubt a few lives could be saved in this manner.

The practicing physician must ever have in mind certain basic facts about appendicitis if he is to render efficient medical care. It should be his policy to catalogue these facts as rules to this end. Let it be remembered that appendicitis is an indefinite general term which encompasses a number of clinically different states in the progress of this disease. The physician must attempt to visualize from the data at hand just what state the appendix is in. He must, therefore, refine his diagnosis and classify his case.

Classification

- I. Acute Uncomplicated Appendicitis
- II. Acute Complicated Appendicitis
 - A. Gangrene
 - 1. Acute perforation
 - (a) Local peritonitis
 - (b) Generalized peritonitis

- (1) without ileus
 - (2) with ileus
 2. With pylephlebitis
 3. With liver abscess
 - B. Appendiceal abscess
- III. Chronic Recurrent Appendicitis.

General Rules

1. Acute epigastric or generalized abdominal pain with or without vomiting, which localizes in the right lower quadrant should be considered appendicitis until proven otherwise.

2. Constipation is generally the rule with appendicitis.

3. Never prescribe a cathartic or a sedative for abdominal distress until acute surgical abdomen has been eliminated.

4. Repeated physical examinations, white cell counts, differentials, Schilling Indices, and attention to pulse and temperature curves are necessary to ascertain the progress of appendicitis.

5. Generally, a temperature of 101 degrees or above with a pulse rate of 110 or above in acute appendicitis of more than twelve hours' duration means complications are present or eminent.

6. The prognosis of appendicitis in the extremes of life is always poorer.

7. The treatment of appendicitis is surgical and always demands the immediate services of a competent surgeon.

8. Do not classify appendectomy as a simple operation.

9. Whenever the diagnosis is uncertain and the possibility of appendicitis must be considered, three points must be determined:

- (a) Is the case surgical?
- (b) Is watchful expectancy reasonably safe?
- (c) Do the findings justify operation?

These important questions must be worked out by competent observers in consultation. In every case the patient should receive that treatment which will safeguard his life.

Conclusions

Fifteen thousand deaths could be prevented yearly by more effective education as to the facts about appendicitis. Our present educational program could be made more effective if secondary schools and colleges included in their curricula simple informative courses designed to make the individual reasonably intelligent about some of

the common illnesses which affect the human body. The move for greater dissemination of medical knowledge through the school system should be the problem and duty of our State Medical Society. This fine opportunity for real effective service should not be overlooked.

If the physician desires to give competent service to his patient he must mentally visualize what is transpiring at any given moment; he should catalogue his information and formulate working rules wherever possible. He must consult without hesitancy with his confreres and always urge the institution of that treatment which will most effectively avoid tragedy.

3751 31st Street.

Vitamin Content of Citrus Fruits

The following table shows approximate amounts of the substances listed in Florida oranges, grapefruit and tangerines:

	Oranges per 100 c.c. of freshly expressed juice	Grapefruit	Tangerines
Vitamin C.	50 mgm.	40 mgm.	35 mgm.
Vitamin B.	20 Sherman units	20 Sherman units	No data
Vitamin G.	Present	Present	No data
Vitamin A.	Present	No data	Present
Calcium	8 mgm.	9 mgm.	12 mgm.
Phosphorus	17 mgm.	15 mgm.	13 mgm.
Carbohydrate	11.6 gm.	10.1 gm.	..
Citric Acid	0.9 gm.	1.31 gm.	0.75 gm.
Potential alkalinity	5 c.c. N/ alkali	4.5 c.c. N/ alkali	4.5 c.c. N/ alkali
Fuel value	52 calories	45 calories	..

—From *Citrus Fruits and Health*, by Florida Citrus Commission.

Social Aspects of Tuberculosis

The prevention of tuberculosis is not merely a public health problem but also a powerful social and economic factor which affects the economic structure of the entire nation.

"At a time when all values have tumbled and numerous assets have to be classified as frozen, the health and productivity of the people remain the outstanding and most tangible resources of a nation and it would be the short-sighted policy of the penny-wise and dollar-foolish to curtail preventive health measures for the sake of economy," says Dr. Karl Fischel of Saranac Lake.

The tuberculosis problem is closely linked with other momentous issues of the day, and the tuberculosis death rate of the future is, therefore, bound to be affected by the solution of other problems, be it unemployment, inflation, commodity prices or disarmament.—(From an essay awarded the Leon Bernard Memorial prize for 1938 by the International Union Against Tuberculosis) FISCHEL, KARL, Bull. de l'Union contre Tuberc., 1939, 16.

One Examination for Selectees



A thorough conscientious examination of every applicant is the first and most important requisite of an insurance company before it accepts a risk.

The thousands of selectees for the peace-time army are being examined by civilian draft boards in each locality. This peace army is to be composed of perfect men who can stand the strain of a year's training without physical or mental breakdown.

If after induction in army activities by an army board, a soldier manifests a physical or mental disease acquired prior to induction, and must be discharged, he is a liability on our government. In the past war, the cost rose and mounted into the millions of dollars. The induction boards therefore are rejecting a higher percentage than are the civilian boards. They are held responsible and must trim down cases which local doctors of medicine certify as perfect.

Between the time the selectee is placed in 1-A and the moment he reports to the induction board, many things may happen to his physical or mental condition; some are self-induced. The reports of the army boards are sent back to the draft boards and the examining physicians may compare their diagnoses to the rejection causes.

The ideal way to release the civilian doctors for duty at home defense centers would be to use the reserve officers who now compose the induction boards as traveling examining boards, to rotate them over a given area, and to have them make one complete examination—after which the applicant is in the army.

Let us continue to do our part in this work, but if it is to continue permanently, let us ask for a revision of the laws, to increase efficiency.

President's



Page



President, Michigan State Medical Society



EDITORIAL



CANCER IN MICHIGAN

■ At the request of THE JOURNAL, C. C. Little, Sc.D., Managing Director of The American Society for the Control of Cancer, Inc., and former President of the University of Michigan, has contributed a special statement on cancer control in Michigan.

It is indeed gratifying to have such a distinguished authority compliment the advance made in the state. The Cancer Committee of the Michigan State Medical Society continues active and progressive and deserves its full share of credit for its part of the work.

"The record of the State of Michigan in the field of cancer control is an excellent one, comparing favorably with the highest standards of effectiveness attained in any of the states.

"For the purposes of convenience the state is divided into two areas, one including Wayne, McComb and Oakland Counties, and, of course, the City of Detroit, and the other comprising the rest of the state.

"The organization of cancer control work has, for the most part, been carried on in Michigan by volunteer women under the direction of cancer committees of the state and local medical societies. This latter policy of medical supervision is insisted upon by the American Society for the Control of Cancer which works through its creation—the Women's Field Army.

"Cancer is, of course, unique in that actual individual participation of those interested in the program of education must be obtained and maintained if the campaign is to have any value. Mere acquisition of information is not enough. There must be follow-up and constant pressure to see that individuals do not ignore the advice contained in the informational material which they receive.

"A series of eight Regional Assemblies of Women's Field Army officers and medical ad-

visors has just been completed and the society has announced that the evidence is general that the increase in percentage of patients coming early to the doctors is country-wide and progressive. This means that the campaign to defeat the fear of cancer is already well in sight of a victory, and that following the removal of such fear we may expect that greater results of education will make themselves felt.

"At all events, both the medical profession of Michigan and the lay officers of the Field Army who are coöperating with it are to be congratulated for work already done and encouraged in every possible way in the advancement of that to be carried on."

READ AND WRITE

■ A great deal of criticism is voiced about the voluminous writings of the profession.

This criticism is not warranted.

It is not the voluminous writing which should be criticized so much as the voluminous publication of these writings.

The value of a thesis is not primarily in the publication thereof. To assemble the data necessary to produce a scientific article requires much reading and serious thought. It requires the investigation of many viewpoints and differences of opinion. This reading cannot be superficial and must be accompanied by a singleness of purpose which impresses the material on the mind of the writer. This data must be assembled in logical order and the various view-points balanced and weighed against each other. Then the ultimate thought must be put in intelligible form.

Medical journals welcome the submission of all manuscripts for review and are glad to publish them if they are of sufficient value and interest to the reader. But even though the paper never appears in print that one man has been well repaid for his work, the interest of his patients more completely satisfied and a better physician is the result.

DON'T TELL THE WORLD

■ The other day the secretary of a western Michigan county medical society made the statement that the first time that one of his members asked why laws unfavorable to the medical profession were enacted by the legislature, "all hell will break loose." He continued his statement by detailing how he had pled with his members to interview their local representatives to the state government and in spite of promises, not a single one had even broached the pertinent subject to the legislators.

Of course, this situation is so common that the secretary was not even commiserated.

You, and every other member of the Michigan State Medical Society, are informed by the secretary of your county society of all bills bearing on medical subjects introduced in the two houses. Usually every week or two your representative will visit your district over the week end or longer and will not only listen to, but be considerably influenced by, your opinion as to the value of these bills.

Don't tell it to the world. Don't grumble in the doctor's room. Tell it to your legislator.

In Memoriam

John F. Adams of Ann Arbor, Michigan, was born February 16, 1867, at Woodville, Ontario, Canada. He came to Michigan at the age of twenty-one, and a year later, entered the College of Physicians and Surgeons of the University of Illinois where he was graduated in 1893. He engaged in practice at Mt. Pleasant, Michigan, for a number of years, and twenty-five years ago moved to Ann Arbor where he was an active member of the profession until his death on January 10, 1941.

George H. Belote, M.D., of Ann Arbor, was born in 1894 in Centerville, Michigan. A student at the University of Michigan in 1916, his studies were interrupted by army service in the World War; he enlisted in the headquarters troops of the 85th division in July, 1917. He received his commission as second lieutenant in 1918 and was honorably discharged in 1919. He returned to the University and was graduated from the medical school in 1923. From 1923 to 1925 he was an intern at the University Hospital. He then became instructor in the dermatology department. In 1928 he was named assistant professor and in 1930 was made associate professor of dermatology and syphilology. Doctor Belote was a member of the University School faculty for seventeen years. His work won him national recognition as an authority on dermatology and syphilology. He died on March 11, 1941, after an illness of three weeks.

J. E. Bolender of Grand Rapids, Michigan, was born at Hubbardson in 1885 and was graduated from the University of Michigan Medical School in 1912. He started his practice in Sparta where he remained until he came to Grand Rapids, ten years ago. Dr. Bolender died on January 9, 1941.

Arthur H. Burleson, M.D., of Olivet, Michigan, was born September 19, 1861, in Quincy, Michigan, and was graduated from the University of Michigan Medical School in 1896. Doctor Burleson first started practicing at Albion, a year later moved to Tekonsha, where he remained until 1906, when he located in Olivet and practiced there for thirty-four years. Doctor Burleson was an Honorary Member of the Michigan State Medical Society since 1932 and had served as secretary of Eaton County Medical Society for a number of years. He died December 17, 1940.

Don Bruce Cameron of Grand Rapids, Michigan, was born in White Pigeon, Michigan, on Oct. 24, 1896. He studied at Olivet college for three years and was graduated from the University of Chicago with the degree of bachelor of science. Following graduation he enlisted in 1917 and later engaged in research work at Walter Reed hospital, Washington, D. C. He later entered the officer's training camp at Camp Taylor and was commissioned a lieutenant in the field artillery. After the war Dr. Cameron entered Rush Medical College and was graduated in 1922. He served his internship at St. Luke's Hospital, Chicago, and in November 23, 1927, started practice in Sturgis, where he remained until 1927 when he accepted an appointment as resident surgeon at Butterworth Hospital. The following year Dr. Cameron opened offices in Grand Rapids which he maintained until he was forced to abandon them last October because of ill health. He died January 17, 1941.

Kenneth W. Dick of Imlay City, Michigan, was born April 17, 1886, in Ontario, Canada, and was graduated from the Detroit College of Medicine in 1907. He maintained a practice in Detroit for 18 years. In 1928 he moved to Carsonville, and in 1937 became a staff member of the Home and Training School, Lapeer. He began practice in Imlay City in 1939. Doctor Dick was vice president of the Lapeer County Medical Society in 1940 and had been reelected for 1941. He died January 25, 1941.

Thomas Jefferson Henry of Detroit, Michigan, was born in 1861 in Ontario, Canada, and was graduated in 1900 from Trinity Medical College, Toronto. Doctor Henry was a member of the staff of Grace Hospital and had maintained a practice in Detroit for over forty years. He died December 24, 1940.

J. G. Huizinga of Holland, Michigan, was born in 1868 and was graduated from the University of Michigan Medical School in 1890. Doctor Huizinga established a practice in Holland and then went to Englewood, a suburb of Chicago. While there, he served as professor of ophthalmology at the former Chicago Eye, Nose and Throat College. Later he practiced in Grand Rapids and remained there thirty years. Some ten years ago he returned to Holland. Doctor Huizinga died in Lake City, Florida, on December 20, 1940.

Alexander H. MacPherson, M.D., of Grand Rapids, was born in 1880 at Grand Rapids and was graduated from the University of Maryland at Baltimore. Doctor MacPherson has practiced in Grand Rapids for thirty-five years, except for the duration of the World War when he served as medical chief of the Base Hospital at Camp Grant, Illinois, with the rank of captain. He died on March 7, 1941.



YOU AND YOUR BUSINESS



ROSTER NUMBER

The annual directory of membership will be published, as usual, in the May issue of *THE JOURNAL* which goes to press April 10.

Physicians who have not as yet mailed their county and state medical society dues to their county secretary are urged to do so in order that their names may appear in the Roster Number of the *MSMS JOURNAL* as members of the Michigan State Medical Society.

MICHIGAN HOSPITALS AND MEDICAL PAYMENTS PLAN

This voluntary agreement, entered into and approved by the American Mutual Alliance, the Association of Casualty and Surety Executives, a group of Michigan insurance carriers, the Michigan Hospital Association and the Michigan State Medical Society, has been developed to solve a most annoying problem: doctors and hospitals have in the past experienced difficulties in securing the payment of fees from patients who have collected damages from persons causing their injuries, despite the fact that in such cases a part of the patient's financial recovery actually was based on hospital, medical and surgical expenses.

The voluntary agreement of the insurance carriers and associations, and the hospitals and medical profession of Michigan is aimed to more definitely assure hospitals and physicians of payment for their services to those individuals who are injured in accidents and who, because of their injuries, are indemnified by an insurance carrier.

In order that the insurance companies may furnish the fullest coöperation (and for the hospitals' and physicians' own proper protection), physicians and hospitals are requested to notify insurance companies promptly of any claim upon which an order has been or may be issued.

Forms for the convenience of physicians and hospitals have been devised and are available in pads of 50 and 100 (25c and 50c respectively). Signify Form 1, 2 or 3 and the number desired when writing the Secretary, 2020 Olds Tower,

APRIL, 1941

Lansing. These forms were printed in the February *MSMS JOURNAL*, pages 126-127-128.

IN MICHIGAN, IT'S TWO YEARS

Statutes of limitations—another form of defense in malpractice actions—were designed “to prevent the unexpected enforcement of stale claims, concerning which persons interested have been thrown off their guard by want of prosecution” (*Miller v. Calumet Lumber and Mfg. Co.*, 121 Ill. App. 56); the various state legislatures realizing, in enacting these laws, that time will erase the best evidence by loss, destruction of records, or death of witnesses, and that if there is a just cause of action it will be begun at once. —SAMUEL WRIGHT DONALDSON, A.B., M.D., F.A.C.R., *The Röntgenologist in Court*. Charles C. Thomas, 1937.

CALL IT “THE BEAUMONT BRIDGE”

WHEREAS, Plans are in progress for the construction of a bridge from Mackinac City to St. Ignace, connecting the two beautiful peninsulas which constitute the State of Michigan, and

WHEREAS, The area in the vicinity of this great public project is sanctified by the research work and scientific contribution of an Army doctor, William Beaumont, Doctor of Medicine, who, in 1833 at Fort Mackinac, with keen scientific insight and true medical interest, made the first publication of physiology of digestion. This work, done under tremendous difficulties, was the most important on this subject to that date and laid much of the foundation for future studies. His studies were begun at an isolated military post in the wilderness of Northern Michigan and completed only by following up his patient and bringing him nearly two thousand miles to Plattsburg, New York. This is one of the great dramatic episodes in the history of medicine, and

WHEREAS, The contributions of Doctor Beaumont to the science of medicine have saved untold lives and relieved the distress and pain of thousands of our fellow beings, therefore, be it

RESOLVED, That the proper authorities be petitioned by the Michigan State Medical Society to christen this bridge structure in honor of William Beaumont, M.D., as a method of publicly recognizing this great physician for his contribution to the relief of human suffering.

The above resolution was adopted unanimously by the House of Delegates of the Michigan State Medical Society in September, 1940.

No more fitting and honorable name could be

given to the span between the Upper and Lower Peninsulas of Michigan than "The Beaumont Bridge."

ASSOCIATION OF PHYSICIANS AND CULTISTS

The following statement of policy was adopted by the House of Delegates of the American Medical Association in June, 1938, and by the Michigan State Medical Society's House of Delegates in September, 1938:

Many inquiries concerning the relations of the various cults to the regular profession have been received. The inquiries pertain particularly to the osteopath and the optometrist. Some of our members are giving lectures in osteopathic and optometric schools and addresses before their societies. Some members are associated by a common waiting room in offices with them. Some members are by mutual agreement professional associates principally in the field of surgery. There are some instances of partnership in practice. All of these voluntarily associated activities are unethical. Such relations certainly do not "uphold the dignity and honor of (our) profession" or "exalt its

standards." In case of emergency no doctor should refuse a sufferer knowledge or skill which he possesses to the sufferer's harm but this is quite a different matter from that of a consultant or practitioner who by consulting or practicing with him assists a cultist to establish himself as competent and on the same basis of medical knowledge as a doctor of medicine. By the very nature of the education and training of each, a consultation with a cultist is a futile gesture if the cultist is assumed to have the same high grade of knowledge, training and experience as is possessed by the doctor of medicine. Such consultation lowers the honor and dignity of the profession in the same degree to which it elevates the honor and dignity of the irregular in training and practice. Practicing as a partner or otherwise has the same effect and objection. Teaching in cultist schools and addressing cultist societies is even more reprehensible, for such activities give public approval by the medical profession to a system of healing known to the profession to be substandard, incorrect and harmful to the people because of its deficiencies. There hardly can be a voluntary relationship between a doctor of medicine and a cultist which is ethical in character.

BENEFITS OF MEMBERSHIP

The Michigan State Medical Society and its component county societies bring you many valuable benefits of membership, especially these of a professional and educational character:

1. Assurance of a high ethical standing for you in the community, the state and the nation, before the public, the law, and the profession.
2. Postgraduate courses and lectures to keep you in touch with medical progress and to improve professional ability.
3. Your common interests safeguarded through the vigilant work of democratically selected officers who are men of your own kind: (a) who know your problems and those of your patients; (b) who serve generously without compensation; (c) who need and ask for your cooperation and advice.
4. Benefits accruing from the action of numerous committees constantly working to advance your interests as a physician in your community; machinery solving problems of preventive and curative medicine which could not be worked out by you as an individual, even with a great sacrifice of time and effort.
5. Maintenance and constant improvement of standards of medical practice for the protection of patients.
6. A monthly Journal of high quality with the latest scientific literature, and general information important to you.

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\$50.00 weekly indemnity, accident and sickness	\$66.00 per year
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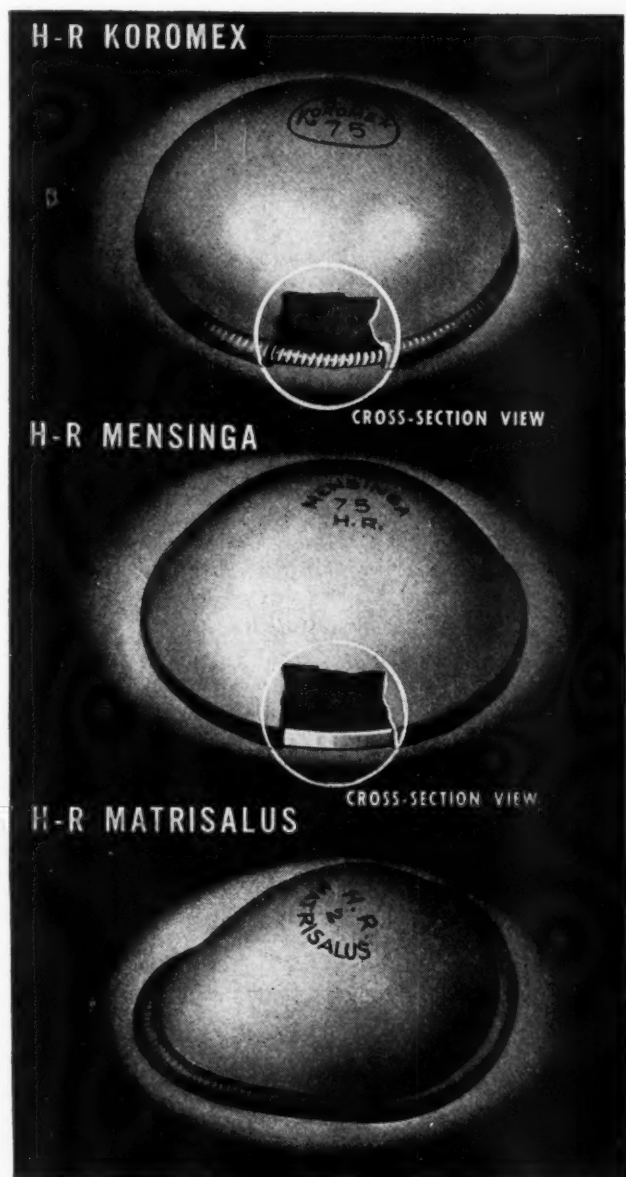
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APRIL, 1941

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Say you saw it in the Journal of the Michigan State Medical Society

★ MICHIGAN'S DEPARTMENT OF HEALTH ★

HENRY A. MOYER, M.D., Commissioner, Lansing, Michigan

RECORD LOW INFANT DEATH RATE

Michigan's infant mortality record for 1940 is the best the state has had, according to provisional figures. Deaths of babies in their first year were at the rate of 40.72 per 1,000 live births, a lower rate than ever before. It was the third successive record.

If there had been 72 fewer deaths of infants, the rate would have dropped under 40 for the first time. Detroit's rate has been under 40 since 1938. The provisional rate for Detroit in 1940 is 38.14.

"In the last ten years, the infant death rate has been cut a third," says Commissioner H. A. Moyer, "and the result is that in 1940, more than 2,000 babies lived who would have died in 1930."

The figures for 1940 and 1930 follow:

	1940	1930
Births	99,139	98,882
Deaths under 1 yr.	4,038	6,213
Deaths per 1,000 live births	40.72	62.83

Commissioner Moyer said that prenatal care is demanded by more women than ever before, and that the quality of medical care throughout pregnancy and at birth is better than ever. The Department's bureau of maternal and child health, established in 1920 when the infant death rate was two and a half times what it is today, has worked actively with physicians for years in an effort to bring greater safety and ease to mothers at birth and to improve the care of both mother and baby afterwards.

In the last three years, 126 physicians have taken two-week leaves of their practices to modernize their obstetrical work in postgraduate studies at the University Hospital at Ann Arbor. The studies have been sponsored by the Department and have been available without charge to physicians, on the endorsement of their county medical society.

Furthermore, the Department has coöperated with the Michigan State Medical Society, the University of Michigan, and Wayne University in taking into the field postgraduate material through lectures. One pediatric and two obstetric consultants from the Department's staff are also in the field, at the call of physicians.

Michigan is not yet in the group of states having the lowest infant death rates. The latest comparative figures are the provisional census rates for 1939, which show 14 states under a rate of 40. The lowest rates in 1939 were: Minnesota 35.4, Connecticut 36.1, Nebraska 36.5, Oregon 36.6, Washington 36.7. Washington was the first state to achieve a rate under 40, when it had a rate of 38.8 in 1933.

Nationally, the infant death rate has been dropping for several years. It went below 50 for the first time in 1939, when it was 48.0, compared with 51.0 in 1938.

NEAR EPIDEMIC OF MEASLES

As expected, measles cases in Michigan are now being reported in epidemic numbers. The reports from physicians are coming from nearly all sections of the state.

Prediction of 1941 as an epidemic year had been made because of the three-year cycle evident in recent years. In 1935 and again in 1938, 80,000 cases were reported.

Every physician in the state has received or will receive a new measles pamphlet prepared especially for medical men. It is called "This Is a Measles Year, Doctor!" The preparation of authoritative material on prevention and treatment of measles and

its complications was made with the coöperation of the Michigan branch of the American Academy of Pediatrics and the Child Welfare Committee of the Michigan State Medical Society.

The new pamphlet is eight pages, folded five by eight inches in size, and it carries a tab for ready reference in a file. In counties with full time health departments, distribution of the pamphlets is made through the health officer. In other counties, copies were mailed, as addressed by the executive office of the State Medical Society.

Measles cases reported in February totaled 9,510. This compares with February reports in previous epidemic years as follows: February, 1938, 10,473; February, 1935, 4,617. The January cases in 1941 totaled 6,485, a much larger total than the January reports of either 1938 or 1935, when the figures were 3,056 and 1,264, respectively.

The big months in the previous two epidemic years were March, April and May, when 15,000 to 25,000 cases a month were reported.

NEW HIGH RECORD IN BIRTHS

Births in 1940 totaled 99,139, provisionally, five per cent more than in 1939, and only a few hundred under the all-time high of 99,940 births in 1927.

The birth rate, calculated on the final census population for the state of 5,256,106, is 18.86 births per 1,000 population. This is the highest birth rate since 1930, when it was 20.4.

Births for selected years follow:

1940—99,139	1935—87,403
1939—94,432	1930—98,882
1938—96,962	1920—92,245
1937—91,566	1910—64,109
1936—88,457	1900—43,699

CLASSIFIED ADVERTISEMENTS

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Woman's Auxiliary



Only a few more weeks and the members of the Woman's Auxiliary of the American Medical Association will be arriving in Cleveland for their annual convention, June 2-6. Have you made your reservations? If not, send your request, *at once*, to Dr. Edward F. Kieger, Chairman of Committee on Hotels and Housing, 1604 Terminal Tower Building, Cleveland.

Bay County

The Woman's Auxiliary to the Bay County Medical Society met at the home of Mrs. D. J. Mosier on Feb. 12, for a buffet dinner at 6:30, with twenty-one present.

Mrs. W. R. Ballard presided at the business meeting which followed, and appointed Mrs. P. R. Urmston, Mrs. E. S. Huckins and Mrs. R. C. Perkins on the nominating committee to present a new slate of officers at the next meeting.

The members decided to designate Tuesday as the day the medical auxiliary would work at the Red Cross rooms.

Miss Helen Hudson, general secretary of the Y.W.-C.A., addressed the group on the subject, "International Trade Routes."

MRS. J. NORRIS ASLINE

Ingham County

The Auxiliary held its January meeting at the home of Mrs. John Albers in East Lansing. The date fell upon Inaugural Day, and the social chairman, Mrs. Harold Miller, in coöperation with the hostess,

had arranged a most beautiful display of flowers and lighted tapers in the patriotic colors of red, white and blue.

The program chairman, Mrs. Robert Breakey, presented Mrs. Hugh Wilson of Ann Arbor as the speaker for the afternoon. Mrs. Wilson won the Avery Hoopwood award at the University of Michigan several years ago and since that has published many stories and plays in various papers and magazines. We listened to a most interesting talk on her career. Mrs. Harold Wiley, our president, selected Mrs. L. G. Christian and Mrs. C. F. DeVries to aid Mrs. E. I. Carr on the important legislative committee. The auxiliary voted to invite the Dental Auxiliary to tea for next month. He hope this will be the beginning of a friendship which will be of great mutual value to both groups. The tea was held at the Sparrow Hospital Nurses Home on February 17.

The Ingham County Auxiliary gave a tea in February for the members of the Auxiliary to the County Dental Society and the large attendance at this combined meeting was most gratifying. We hope this will establish a precedent for more meetings and deeper friendly relations between the two groups.

Dr. Harold A. Miller, chairman of the Legislative Committee for the State Medical Society, discussed some of the many bills to come up in the legislature and explained the way bills go in for passage. It was a timely discussion and an interesting question hour followed. We had a friendly social hour following the meeting and a lovely tea was served by Mrs. H. A. Miller, Mrs. Robert Breakey and assistants.

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Jackson County

The February meeting of the Woman's Auxiliary to the Jackson County Medical Society was held at the home of Mrs. Harold Hurley. Forty-one members were present.

It was voted to accept the invitation of the Jackson Woman's Club to attend the lecture of Henry C. Wolf, foreign correspondent, author, and lecturer, March 18.

The program was in charge of Mrs. George Hardie who introduced Mrs. George Baker of Parma. Mrs. Baker reviewed Evelyn Eaton's "Quietly My Captain Waits."

The members were delighted with Mrs. Baker's interpretation of the story.

Kalamazoo County

The January meeting of the Kalamazoo Auxiliary was held at the home of Mrs. William E. Shackleton, January 21. Mrs. Martin Patmos and Mrs. Katherine Armstrong were the assisting hostesses.

A coöperative dinner was enjoyed by the thirty members and guests present. The latter were wives of the Medical Staff from Fort Custer.

Mrs. Kenneth Crawford, president, conducted the business meeting. A report was made on the recent purchase, by the auxiliary, of a wheel chair, which is to be placed in the Loan Closet at the Health Service in the City Hall. This chair is to be available to anyone in the community in need of it.

Mrs. Walter den Bleyker, public relations chairman, presented the program for the evening. Her subject was "Socialized Medicine."

The Auxiliary to the Kalamazoo Academy of Medicine held a coöperative dinner Tuesday, February the eighteenth, at the home of Mrs. W. Bartlett Crane, South Rose Street. Mrs. Ralph Shook and Mrs. John Littig assisted the hostess. A most enjoyable evening was spent by the thirty-five members present.

Following the business meeting the remainder of the evening was spent informally.

FRANCES RICTERINK

Kent County

The January meeting of the Kent County Woman's Auxiliary was held in the Grand Rapids Public Museum.

After the luncheon served by teams led by Mrs. Jerome Webber and Mrs. Harold Damstra the group was addressed by Dr. Pearl L. Kendrick on "Contributions of the Public Health Laboratory to the Community." Dr. Kendrick is Director of Western Michigan Division of the Michigan Department of Health Laboratories and is internationally known for her fine work on pertussis vaccine.

A business session led by the president, Mrs. Guy DeBoer, closed the meeting.

The February meeting of the Woman's Auxiliary to the Kent County Medical Society was held Wednesday afternoon, the twelfth, in the auditorium of the Public Museum. Mrs. J. E. Meengs presided at the business meeting, after which Mrs. James A. Work, Jr. of

JOUR. M.S.M.S.

WOMAN'S AUXILIARY

Elkhart, Indiana, presented a paper on "Dr. Albert Schweitzer."

A recording of Bach's "Prelude to the Fugue in E Minor" played by Schweitzer was given as an appropriate conclusion to Mrs. Work's sketch.

Mrs. L. Paul Ralph and Mrs. George L. Riley and their committees served tea after the program.

PEARL GAIKEMA

Monroe County

On the afternoon of January 21, 1941, the Auxiliary and guests met for luncheon at the Monroe Golf and Country club. There were eighty-three in attendance.

Miss Margaret Slater, Sergeant Policewoman of the Toledo, Ohio, Police Department, spoke on "Woman's Part in the Prevention of Crime." She was presented by Mrs. Robert J. Williams, President, who also presented two special guests, Mrs. Roger V. Walker, president, and Mrs. A. O. Brown, secretary of the State Auxiliary.

The Auxiliary met January 28 for an afternoon meeting at the home of Mrs. Edgar C. Long. There were twelve in attendance and after a short business meeting tea was served by the hostess and the group sewed for the Red Cross.

GENEVIEVE L. REISIG,
Press Chairman.

Washtenaw County

The Woman's Auxiliary of the Washtenaw County Medical Society held its regular meeting in the Michigan Union on Tuesday, December 10.

Mrs. Mathew Soller, Public Health Nurse, spoke on the Health Program in the public schools of Ann Arbor. Mrs. Robert Graham gave a number of book reviews on popular medical books.

The members of the committee on British War Relief were on hand to receive donations of blankets and warm clothing to be sent to England.

The members also responded generously to a call for food donations, to be placed in Yuletide baskets for the needy.

The Woman's Auxiliary of the Washtenaw County Medical Society enjoyed a potluck dinner meeting Tuesday, January 14, at the home of Mrs. Harry A. Towsley. After the routine business meeting the members played games and enjoyed a social hour.

The Auxiliary, with Mrs. Dean Myers as chairman, is collecting surgical instruments from members of the profession to be sent to Great Britain.

The February meeting was a joint meeting with the husbands as guests at the Michigan League.

Wayne County

The Woman's Auxiliary to the W.C.M.S. held its December meeting on Friday the 13th at the Society's headquarters.

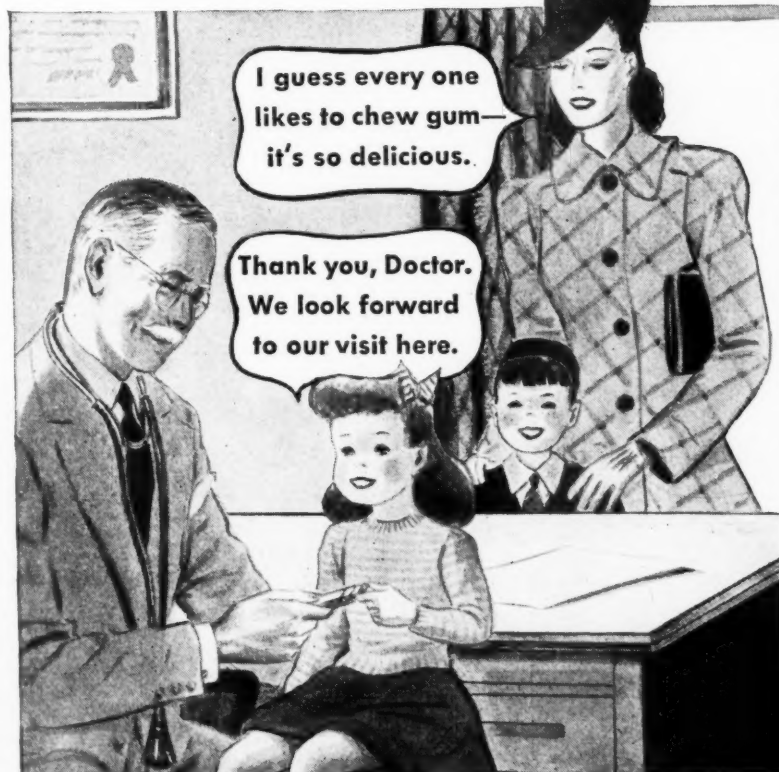
The business meeting was followed by an address by Colonel H. W. Miller of the Engineering Department of the University of Michigan, who spoke on "The Causes and Progress of the Present War."

Colonel Miller analyzed the present conflict in respect to the racial characteristics of the warring nations, their social and economic problems, and the great wars of the past.

On Saturday, December 21, the children of members of the Wayne County Medical Society were guests at a Christmas party at the Society's clubrooms. More than 150 little people were present to meet Santa, who had brought gifts for each. A puppet show, a children's band concert, and a carol service were followed by refreshments.

Gay little voices and merry laughter echoed through-

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Have some gum in your pocket or bag and in the office. Your patients—children and adults—appreciate your friendliness when you offer them some. Try this for a month—you'll be pleased with the results.

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V-24

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out the rooms and were proof that the efforts of Mrs. William L. Sherman, chairman of the Social Committee, were thoroughly appreciated.

The Woman's Auxiliary to the Wayne County Medical Society held its regular monthly meeting on Friday, February 14, at 2:00 P. M.

Following the meeting Mrs. A. Duane Beam, Program Chairman, presented Dr. Frederick S. Yonkman, who spoke on "Experimental Contribution to Advancement in Medicine."

Mrs. Leo P. Rennell, Mrs. Louis J. Bailey, Mrs. Richard C. Connelly, and Mrs. Edgar E. Martmer were hostesses at the tea which concluded the program.

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LETTER TO THE EDITOR

March 14, 1941.

Dr. Roy Herbert Holmes, Editor
 Journal of the Michigan State Medical Society

Dear Dr. Holmes: Recently there has been established in this library, with the approval of The Surgeon General of the Army, a microfilm copying service and a weekly Current List of Medical Literature prepared from the cards made for future issues of the Index Catalogue. These two projects are conducted under the auspices of a recently organized group of Friends of the Army Medical Library.

The object of this undertaking is to place the resources of this library at the disposal of those who are engaged in the advancement of medical research, irrespective of where they live or work.

Undoubtedly there are many readers of your journal who would be interested in learning of this service and it would be highly appreciated if you could assist us in making facts more widely known, through the columns of your journal. As Librarian of the Army Medical Library, I have a great interest in the work the Friends of the Library are doing, and although I take no part in this officially, I have left no stone unturned to aid them in their work.

Sincerely yours,
 HAROLD W. JONES,
 Colonel, M.C., U. S. Army,
 The Library.

JOUR. M.S.M.S.

★ COUNTY AND PERSONAL ACTIVITIES ★

100 Per Cent Club of 1941

Barry
Ingham
Luce
Manistee
Muskegon
Oceana
Ontonagon
Tuscola

The above county medical societies have certified the 1941 dues of 100 per cent of their membership. A number of other societies have certified all but a few of their 1940 members. As soon as these few have paid their 1941 dues the list of 100 per cent county societies will be much larger.

Wm. G. Gamble, M.D., Bay City, addressed the Northern Michigan Medical Society at Cheboygan on March 13 on the subject of "Shock."

* * *

The Michigan Association of Industrial Physicians and Surgeons will hold its 1941 annual meeting in Detroit on April 16.

Frank H. Power, M.D., Field Consultant in Cancer for the Michigan State Medical Society, addressed the Athena Club at Algonac on Tuesday, March 4, on the subject of "Cancer."

* * *

The American Medical Golfing Association will hold its 27th Annual Tournament on Monday, June 2, over the Country Club and Pepper Pike Courses, Cleveland, Ohio. For detailed information and application blank, write Bill Burns, 2020 Olds Tower, Lansing.

* * *

Louis J. Gariepy, M.D., Detroit, was recently honored with the presentation to him by the Staff of Mt. Carmel Mercy Hospital of a beautiful plaque on which the following inscription appears "Presented in recognition of outstanding service."

* * *

The American Association of Industrial Physicians & Surgeons will hold a postgraduate institute in Pittsburgh on May 5 to 8. The Institute will mark the 26th annual meeting of the Association and the second annual meeting of the American Industrial Hygiene Association.

* * *

Alpha Epsilon Delta, the national honorary pre-medical fraternity, installed its thirty-second chapter at the University of Detroit on March 8, 1941, when the Iota chapter of the Omega Beta Pi fraternity became the Michigan Alpha chapter with the induction of twenty students and two faculty members.

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I. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," Am. J. Syph. Gon. & Ven. Dis., 23, 201 (March) 1939.

*Silver Picrate, is a definite crystalline compound of silver and picric acid. It is available in the form of crystals and soluble titration for the preparation of solutions, suppositories, water-soluble jelly, and powder for vaginal insufflation.

APRIL, 1941

313

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Division of Mental Diseases
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and
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SAWYER SANATORIUM

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Marion, Ohio

George A. Zindler, M.D., and Franklin O. Meister, M.D., have joined the medical staff of the Battle Creek Sanitarium. Dr. Zindler was associated with the University of Michigan and Wayne University before entering private practice in Detroit; Dr. Meister has been associated with the University of Wisconsin.

* * *

"The Foundation Prize" of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons has been announced by James R. Bloss, M.D., Secretary, 418 11th Street, Huntington, W. Va. All manuscripts must be in the hands of the Secretary before June 1. The prize consists of \$150.00. For rules write to the Secretary.

* * *

Eloise Hospital, Psychiatric Division, announces its second annual Post Graduate Clinic for General Practitioners, Wednesday, April 23, 1941, from 8:30 A. M. to 5:00 P. M. All members of the profession are invited. No fees.

* * *

A one-day conference sometime in June on Student Health Practice is being arranged for physicians and others interested in this work. Address inquiries concerning plans for the conference to Dr. Claire E. Healey, University Health Service, University of Michigan, Ann Arbor, Michigan.

* * *

Wm. J. Burns, Executive Secretary of the M.S.M.S., addressed the Highland Park Physicians Club in Highland Park on March 6, on the subject of "The Trends of Legislation."

"Medical Legislation" was the subject of another address by Mr. Burns before the Clinton County Medical Society on April 7 in St. Johns.

* * *

Carleton Dean, M.D., of Lansing has been appointed Director of the Crippled Children Commission, effective April 1. Doctor Dean has been serving as Deputy State Health Commissioner for the past year and half, prior to which time he was director of a county health unit in Northern Michigan. Doctor Dean comes to the Crippled Children Commission with the best wishes of the medical profession.

* * *

Michigan Medical Service and Michigan Hospital Service celebrated their First and Second Anniversaries respectively at a banquet held on March 26 at the Hotel Statler, Detroit. Father Alphonse Schwitalla, S. J. Dean of the Medical School of the University of St. Louis, and James A. Hamilton, Past President of the American College of Hospital Administrators, were the out-of-state guest speakers.

* * *

Basic Science Appeal Lost.—The chiropractors' appeal to the Michigan Supreme Court on the opinion of Hon. Vincent M. Brennan, Judge of the Wayne County Circuit Court in the case of Timpona vs. the Basic Science Board testing the constitutionality of the Basic Science Law, has been dropped. Therefore, the opinion of Judge Brennan upholding the validity of the Basic Science Law stands and the law's constitutionality is firmly established.

* * *

Captain L. A. Potter, Inspector for the Michigan Department of Health, has been busy investigating the activities of irregular and unlicensed practitioners. Among those recently brought to court was a Charles DeBoer a chiropractor of Lansing who has been practicing without a license. Numerous other irregular practitioners have removed signs indicating "doctor" without qualification after investigation and warning from Captain Potter.

The Parents' Institute, Inc., of New York City, announces the introduction of TRUE COMICS which is a magazine using the color appeal and other features of popular comics, but depicting exciting events of present and past history. It is the aim of the Parents' Institute in introducing this educational magazine for children to satisfy the demand for colored picture type magazine but at the same time eliminate the lurid magazines featuring fantastic excitement, in colored picture form, portraying impossible, often grotesque characters.

OFFICIAL CALL

The American Medical Association has issued the Official Call to the officers, fellows and members for its 92nd annual session to be held in Cleveland, Ohio, June 2 to 6, 1941. The headquarters hotel will be Hotel Statler, Cleveland.

Write Dr. Edward F. Kieger, 1604 Terminal Tower, Cleveland, Ohio, TODAY for hotel reservations.

The Annual Refresher Course given in Detroit will be held on April 28 at Henry Ford Hospital; April 29 at The Children's Hospital; and on April 30 at Herman Kiefer Hospital. Among the lecturers included on the three-day program are Drs. W. C. C. Cole, P. J. Howard, Warren Wheeler, Don Barnes, J. A. Johnston, J. P. Pratt, C. L. Mitchell, John Law, Benjamin Carey, Zuelzer, T. B. Cooley, James Wilson, Lee Vincent, Saul Rosenzweig, Loren W. Shaffer, Norman C. Wetzel, Bruce Douglas, J. A. Kasper, E. E. Martmer, Franklin Top and Donald Young.

* * *

The American Academy of Physical Medicine will hold its nineteenth annual meeting and scientific session on April 28-30, in New York City. Headquarters will be in the Hotel Pennsylvania. Clinics will be held at the Medical Center, New York Orthopaedic Hospital, Post Graduate Hospital and the Skin and Cancer Hospital. All members of the medical profession and those of related interests are invited to attend. No registration fee. Write Herman A. Osgood, M.D., 144 Commonwealth Avenue, Boston, Massachusetts, for detailed information and program.

* * *

The Seventy-Sixth Annual Convention and Exhibition of the Michigan State Medical Society will be held at the Hotel Pantlind-Civic Auditorium, Grand Rapids, September 17 to 19, 1941. A galaxy of eminent nationally known physicians will bring you an intensive three-day postgraduate program that you will not want to miss. In addition, more than one hundred scientific and technical exhibits will be displayed for your information and enjoyment. Plan now to come to Grand Rapids next September. Write today for your hotel reservations.

* * *

Doctor, remember your particular friends, the exhibitors, at your annual convention, when you have need of equipment, appliances, medical supplies and service. Here are ten more of the firms which helped make the 1940 convention such a success:

Lea & Febiger, Philadelphia.
A. Kuhlman & Company, Detroit.
Jones Metabolism Equipment Company, Chicago.
The G. A. Ingram Company, Detroit.
Horlick's Malted Milk Corporation, Racine, Wisconsin.
Holland-Rantos Company, New York.
H. J. Heinz Company, Pittsburgh.
The J. F. Hartz Company, Detroit.
Hanovia Chemical and Mfg. Company, Newark.
Hack Shoe Company, Detroit.

APRIL, 1941

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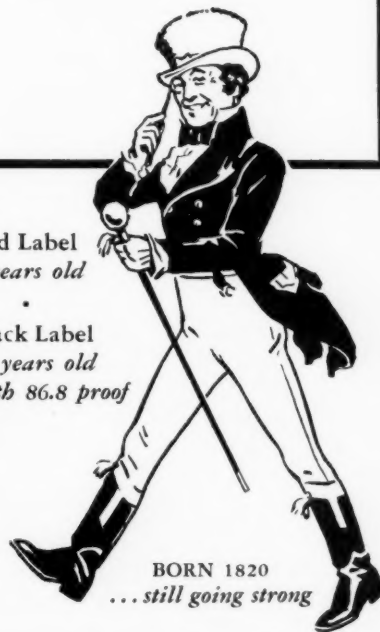
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Doctors Recruiting.—Britain is beginning to feel a shortage of doctors and is discussing with U. S. officials some kind of appeal for volunteers from this country. Since the U. S. fears a similar shortage later, a counter-suggestion is being made in Washington. This is a plan to encourage the several thousand refugee doctors (mostly German and Austrian) now in the U. S. to go to England. Many of these, for various technical reasons, haven't been able to obtain U. S. medical licenses, but they would be welcomed by Britain. The above ideas haven't yet taken definite form, but specific proposals are likely to be publicized before long.—*Newsweek*, March 17, 1941.

* * *

Physical Examinations Ordered by Any Court, Board, Etc.—A new law (Act 18 of 1941) has just been placed on the statute books which requires the payment of fees to persons ordered to take a physical examination by any court, board or commission, or other public body or officer. The law is very brief and reads as follows:

Whenever in any proceedings before any court, board or commission, or other public body or officer, an order is made by such court, board or commission, or other public body or officer, requiring and commanding that a person shall submit to a physical examination, the order shall also provide that the attorney for such person may be present at such physical examination if the party to such examination desires that an attorney representing him be present. The order shall also recite and provide that the party to be examined shall, at least 3 days prior to the date set for said examination, be paid a fee of \$2.00 per diem for the day ordered for attendance, and that such party also be paid a mileage fee at the rate of 10 cents per mile in going to the place of attendance, to be estimated from the residence of such party. The court, board or commission, or other public body or officer, may in its order determine the fees and mileage to be paid, and when so fixed, such determination shall be conclusive. A correct copy of any written report rendered by the examining physician relative to the condition of such person shall be delivered forthwith to such person or his attorney.

* * *

The Radio Committee of the Michigan State Medical Society has arranged broadcasts of talks on the following subjects over radio stations in Battle Creek, Bay City, Detroit, Flint, Grand Rapids, Houghton, Jackson, Kalamazoo, East Lansing, Muskegon, Marquette and Port Huron: In December: Diabetes, Sinus, The Value of X-ray Examination in Accidents and Emergency Cases, Colitis, Artificial Fever Therapy.

In January: Relationship of Dentistry and Medicine, Scarlet Fever, Eyestrain in Mental and Physical Development, and Simple Facts about How We Hear.

In February: Premarital Examinations; The Importance of Prenatal Care; The Menopause; The Value of Anesthesia in Surgery and Medicine.

In March: Can Cancer be Cured? Refrigeration Treatment of Cancer, The Common Causes of Fatigue, and Misconceptions About Heart Disease.

The members of the Radio Committee who arranged for these worthwhile talks and the individual physicians who delivered them have earned the sincere thanks of the medical profession for a good piece of work.

* * *

DETROIT NEXT

Detroit was awarded the 1942 Conference. For the first time in our history, the Detroit Society will be host to the meeting of all the Chapters of the American Society for the Hard of Hearing.

We are proud of the honor and privilege to entertain and serve the members of this national body in our beautiful city. It is our sincere hope that we shall be able to stage as fine a Conference as the one just closed in Los Angeles.

It is not too early to begin working now toward that goal. We trust that our members will unite and give us their earnest coöperation and help.—*The Rainbow*.

THE DOCTOR'S LIBRARY

Acknowledgment of all books received will be made in this column and this will be deemed by us as a full compensation of those sending them. A selection will be made for review, as expedient.

BIOLOGICAL ASPECTS OF INFECTIOUS DISEASE. By F. M. Burnet, M.D., Assistant Director, Walter and Eliza Hall Institute, Melbourne. New York: The MacMillan Company. Cambridge, England: The University Press, 1940. Price: \$3.75.

This Australian scientist discusses the various infectious diseases from the standpoint of biology. In a most interesting manner he portrays the universal significance of bacteria and higher forms of plant and animal life, including man. His words, "Infectious disease is seen as a part of the balance of life where existence of one form of life depends upon the existence of others." To every physician and member of the allied professions it will provide interesting and thought-provoking reading. It is recommended for every physician.

STRANGE MALADY. The Story of Allergy. By Warren T. Vaughan, M.D. Line Drawings by John P. Tillery. New York: Doubleday, Doran and Company, Inc., 1941. Price: \$3.00.

In this second book in the American Association for the Advancement of Science Series, Vaughan has attempted to simplify the knowledge and the theory of allergic response. It would take an exceptionally well educated layman to understand some of the chapters but to a physician who has not been able to keep up in the study of this condition, this book will provide interesting and informative reading. The use of cartoons in describing the various reactions is especially commendable. The excellent standing of Warren Vaughan is sufficient to warrant justification in recommending this book.

ELECTROCARDIOGRAPHY IN PRACTICE. By Ashton Graybiel, M.D., Instructor in Medicine, Course for Graduates, Harvard Medical School; Research Associate, Fatigue Laboratory, Harvard University; Assistant in Medicine, Massachusetts General Hospital; and Paul D. White, M.D., Lecturer in Medicine, Harvard Medical School; Physician, Massachusetts General Hospital, in Charge of the Cardiac Clinics and Laboratory. Philadelphia and London: W. B. Saunders Company, 1941. Price: \$6.00.

This volume is arranged as an atlas as well as a study book on the interpretation of electrocardiograms. The electrocardiograms have been carefully selected and the scope is unusually complete. Every physician who is interested in interpretation of electrocardiograms will be well repaid for adding this volume to his library. The authors rank among the highest in this field.

FOOD, TEETH AND LARCENY. By Charles A. Levinson, D.M.D., Author of "The Examining Dentist in Food Hazard Cases." New York: Greenberg, Publisher, 1941. Price: \$3.00.

The author has filled this book with case reports and follow-ups on hundreds of true and false claims of damage, to the teeth and mouth particularly, caused by foreign substance in foods. It is of interest to all dentists and all physicians who are interested in the medico-legal side of medicine. His pessimistic view of the unscrupulousness of his professional colleagues is not pleasant but may be excused because of his long association in investigating these types of swindles.

APRIL, 1941

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INGHAM COUNTY CLINIC

The Annual Clinic of the Ingham County Medical Society will be held Thursday, May 1.

- 11:30—Round table discussion by Dr. Tom Spies of Birmingham, Alabama, and Dr. Harry Newburgh of the University of Michigan—"Management of Obesity."
- 1:30—Dr. William Scott of Toronto, Ontario—"Ante Partum Hemorrhage."
- 2:15—Dr. John Lundy of the Mayo Clinic—"The Choice of an Anesthetic."
- 3:30—Dr. John Scudder of New York—"Evaluation of Shock and Its Treatment."
- 4:15—Dr. Owen H. Wangensteen of Minneapolis—"Management of Abdominal Distension."
- 5:30—Social Hour
- 6:30—Dinner
- 7:30—Dr. Tom Spies—"Avitaminosis and Nutrition."

It is sincerely hoped that all members of the Michigan State Medical Society and their friends and guests who may find it possible to be present will take advantage of the invitation of the Ingham County Medical Society to attend this Clinic.

READING NOTICES

CHEMOTHERAPY IN GONORRHEA

The newer sulfonamides, sulfapyridine and sulfathiazole, are rapidly revolutionizing the treatment of all forms of gonococcal infections. This exact modus operandi is not clearly understood but is assumed to depend on an ill-defined, inherent action as an anti-septic. The cure rates of both drugs, used in the male, are about the same for both early and late cases, and apparently reach 70 per cent or over (Bull. New York Acad. Med., 17:39 and 64, 1941). Because of its lower toxicity, sulfathiazole appears to be rapidly supplanting sulfapyridine in clinical usage. The sulfonamides are marketed by Eli Lilly and Company in a wide variety of dosage forms.

HIS FIRST CEREAL FEEDING

The baby's first solid food always excites the parent's interest. Will he cry? Will he spit it up? Will he try to swallow the spoon? Far more important than the child's "cute" reactions is the fact that figuratively and physiologically, the little fellow is just beginning to eat like a man.

Many a parent, with limited knowledge of nutrition, attempts to do the baby's tasting for him. Partial to sweets, the mother sweetens her child's cereal. Disliking cod liver oil, she wrinkles her nose and sighs: "Poor child, to have to take such awful stuff!" The child is quick to learn by example, and soon may become poor indeed—in nutrition, as well as in mental habits and psychological adjustment.

Appreciating the importance and difficulties of the physician's problem in establishing and maintaining good eating habits, Mead Johnson & Company continue to supply Pablum in its natural form. No sugar is added. There is no corresponding dilution of the present protein, mineral and vitamin content of Pablum. Is this not worth while?

NEW COLOR FILM ON VITAMIN B COMPLEX AVAILABLE

The apparently high incidence of sub-clinical deficiency states associated with the lack of the vitamin B complex and the difficulty of recognizing and diagnosing such conditions make the announcement of a new motion picture on the vitamin B complex one of special interest. The title of the new film is "The Vitamin B Complex"; it is entirely in 16 mm. Kodachrome. A *sound* as well as a *silent* version is available to medical societies and medical schools.

The film is based largely on clinical material from the Nutrition Clinic, Hillman Hospital, Birmingham, Ala. The cases selected for the most part were not so much those exhibiting the classical syndromes, but rather were of the mild type frequently involving mixed deficiency states and less endemic in character.

The film, "The Vitamin B Complex," was produced under the supervision of the scientific and medical staffs of E. R. Squibb & Sons, and was reviewed before release by authorities of international repute in the field of medicine and nutrition. There is no advertising in the film which is offered solely as a conservative review of the present status of the subject. Inquiries with reference to the loan of the film may be addressed to E. R. Squibb & Sons, Professional Service Department, 745 Fifth Avenue, New York, N. Y.

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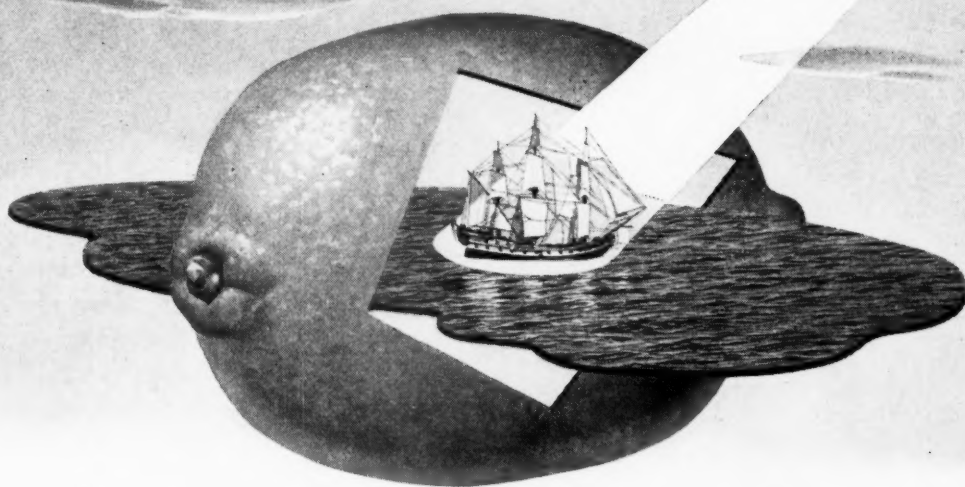
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The Victory Over Scurvy



SCURVY first attracted attention when men began to make long sea voyages. The 16th century explorer, Jacques Cartier, described it and told how it was cured by having his men drink an infusion of the leaves and bark of the Ameda tree. Nevertheless it remained a serious problem in the British Navy until the middle of the 18th century when James Lind wrote his *Treatise on Scurvy*. Through Lind's observations and influence it was virtually eliminated as a plague among British sailors by providing them with lemons or other citrus fruit.

A forward step was made in 1907 by Holst and Frölich who found that the guinea pig could be used experimentally for the study of scurvy. It was not until 1932, however, that the isolation of hexuronic (ascorbic) acid was announced

almost simultaneously by Waugh and King in the United States and by Svirbely and Szent-Györgyi in Hungary. First obtained from the adrenal cortex of animals and from cabbage leaves, it has since been found widely in plant and animal tissues.

The story of the conquest of scurvy presents a dramatic page in medical history, yet it may be but a prelude to a still more fascinating and significant drama. The isolation of ascorbic acid opens the door a little further for investigators studying the physiology and metabolism of the living cell.

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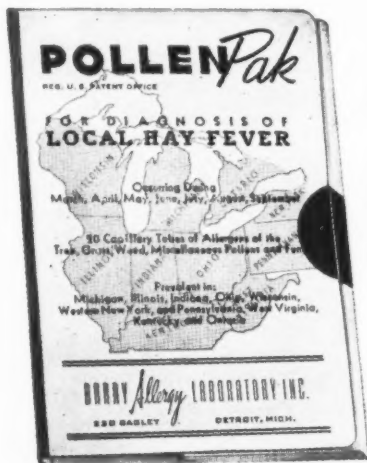
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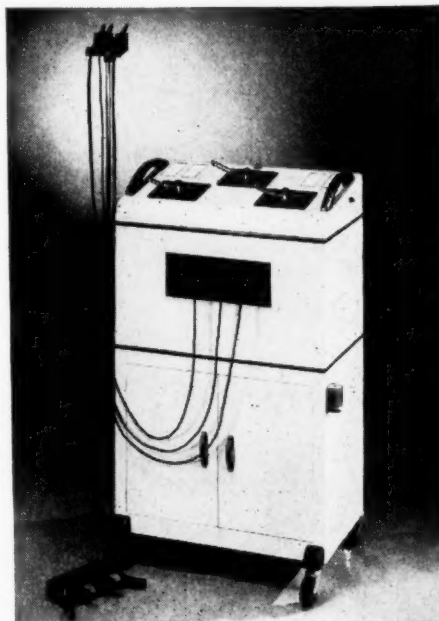
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327

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1. Financial Statement.—

Income		
Total Earned Income from Subscribers.....		\$430,141.52
Other Income (Initial Medical Service Charges, Registration Fees from Doctors, Interest, etc.)		53,280.68
Original Working Capital		10,000.00
		\$493,422.20
Expenses		
Medical and Surgical Service Payments:		
Paid to Doctors	\$241,805.50	
Reserve for Doctors' Services.....	98,283.00	340,088.50
Refund of Subscription Fees.....		30,090.80
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Salaries, Travel, Rent, Printing, Postage, Legal, etc.		91,171.88
		461,351.18
Surplus for reduction of subscription rates or increased service benefits		\$ 32,071.02

Out of each \$1.00 of total income, 69 cents has been paid for or is held in reserve for payment to doctors; 18 cents has been spent for operating expenses; leaving a balance of 13 cents.

The administration expenses during the first year were the lowest for the first year of operation of any comparable hospital or medical service plan.

2. *Service Benefits.*—During this first year, services were rendered for more than 9,200 patients for which 1,694 doctors will receive in excess of \$300,000.

Doctors in 76 of the 83 counties in Michigan have been paid the full Schedule of Benefits for services to subscribers.

3. *Participation of Doctors.*—A total of 3,439 doctors of medicine have completed their registration with Michigan Medical Service—1,483 in Wayne County and 1,956 out-state.

The splendid coöperation on the part of doctors is evidenced by the fact that more than three-fourths of the total possible number have indicated their willingness to render services for subscribers.

4. *Enrollment.*—At the end of the year, there was a total of 131,127 subscribers—49,499 in the Surgical Benefit Plan in addition to the 75,375 Ford subscribers whose enrollment terminated on

entire state—45 groups in the Medical Service Plan and 285 in the Surgical Benefit Plan.

The Individual Doctor's Part

The splendid showing of the first year of operation of the medical plan of the doctors of Michigan testifies to unselfish spirit of the many doctors who served on the committees charged with the conduct of Michigan Medical Service. It becomes more evident each day that a continued growth in the success of Michigan Medical Service will depend on the active participation of a great majority of the doctors in Michigan.

To this end, it is essential that each doctor make it a point to acquaint himself fully with the provisions and the procedures under the medical service plan. Particular attention is invited to the following:

- Make a point of knowing the provisions of both plans.
- **The Medical Service Plan** provides benefits for medical as well as surgical services in the home, the office, and the hospital.
- **The Surgical Benefit Plan** provides for surgical operations and x-ray services up to \$15.00, provided the subscriber is a hospital in-patient.

(Continued on Page 330)

INVESTIGATE THE G-E MODEL D3-38

**IT'S AN
EFFICIENT
COMPACT
FLEXIBLE**



MODERATELY PRICED COMBINATION X-RAY UNIT

You can sum up the D3-38 story in two words: better value. It has more of the features that you need and want—things that you and your colleagues specified—than any other moderate-price unit.

With its wide range of service, its refined, simplified control unit, its flexible, easy-to-operate tilt table with built-in Potter-Bucky diaphragm, its genuine G-E Coolidge Tube, the D3-38 offers you *bigger dollar for dollar value than any comparable equipment.*

You can rely on the D3-38 to routinely produce uniformly high quality results, and you can duplicate them accurately with ease. If you are interested in getting full measure for your x-ray dollar, it will pay you well to investigate the D3-38 before you invest in any x-ray unit. To get complete information, here's all you have to do—just fill in and mail the handy coupon, today.

Please send me complete information about the G-E Model D3-38 Combination Diagnostic X-Ray Unit.

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MAY, 1941

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- Send your Initial Service Report immediately when your services are requested by a subscriber.
- Complete your Monthly Service Report when services are finished and for services rendered each month. Be sure to send a report not later than the end of the month.
- Itemize all services rendered, otherwise the Medical Advisory Board will not know the extent of work done and will not be in a position to authorize full remuneration.

Tardy Bills Will Not Be Honored

- Because of the laxity on the part of many doctors in sending in Monthly Service Reports several months late, the Board of Directors has had to request that all doctors be notified that *Monthly Service Reports will not be honored if they are received 90 days or more after the service has been rendered.*
- Please do not bill the patient until payment is received from Michigan Medical Service. *Special note: in future, statements sent with the check from Michigan Medical Service will indicate "Payment in full for services rendered" when the subscriber's income is below the limit and he is entitled to services in kind. When this indication is not made on the statement, the payment from Michigan Medical Service may be applied as a credit on the charges which the doctor will make for services rendered.*

MICHIGAN MEDICAL SERVICE REGISTRATION HONOR ROLL

100 Per Cent

Barry
Dickinson-Iron
Mason

90 to 99 Per Cent

Calhoun
Ingham
Manistee
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Monroe
Newaygo
Tuscola
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Allegan
Bay-Arenac-Iosco
Chippewa-Mackinac
Clinton
Delta-Schoolcraft
Eaton
Gogebic
Gratiot-Isabella-Clare
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Kent
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Medical Society of North Central Counties
Midland
Oceana
Ontonagon
Ottawa
Saginaw

75 to 79 Per Cent

Branch
Grand Traverse-Leelanau-Benzie
Houghton-Baraga-Keweenaw
Lapeer
Muskegon
Northern Michigan
Oakland
Wexford-Missaukee

BASIC SCIENCE EXAMINATIONS

Since the Basic Science Law which was passed by the Michigan Legislature in 1937 became effective, three examinations have been held by the Board. Two individuals wrote the first examination given on March 29-30, 1940, and both failed to pass. On June 28-29, 1940, the second examination was given to 76, of whom 53 passed and 23 failed. The third examination was given on February 14-15, 1941. Forty were examined, of whom 35 passed and 5 failed. Failures in individual subjects were as follows: Anatomy, 14; Bacteriology, Hygiene and Public Health, 5; Chemistry, 9; Pathology, 14; and Physiology, 14.

The fourth examination will be held on June 20-21, 1941, at University of Michigan, Wayne University and Grand Rapids Junior College, the examinations running concurrently in the different schools. June 7 is the last day for accepting applications, which should be directed to Mrs. Flora E. Dube, 200 Kedzie Laboratory, Michigan State College, East Lansing, Michigan.

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in tablets, is the new, orally effective androgen producing full male hormone effects by mouth — valuable as the supplementary or complete treatment of male sex hormone deficiencies.

ORETON Ampules are standard for male hormone therapy by injection, furnishing intense, prolonged activity for all androgen indications: hypogonadism, the male climacteric, impotence with androgenic deficiency, prostatism, control of functional uterine bleeding, suppression of lactation, after-pains and breast engorgement.

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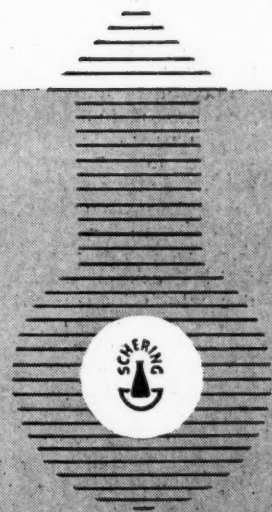
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Ointment affords highly effective absorption of the male sex hormone when massaged into the skin—a

convenient, potent mode of administration. In tubes and in single-dose Toplicators.

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MAY, 1941

Say you saw it in the Journal of the Michigan State Medical Society

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HALF A CENTURY AGO



The Twenty-sixth Annual Meeting of the Michigan State Medical Society was held at Saginaw, June 11 and 12, 1891.

The President, Lyman W. Bliss of Saginaw, gave his annual address entitled, "The Dignity of the Profession." He said:

"When we contemplate the marvelously constructed house, in which for a few brief years dwells the immortal soul of man, we are lost in wonder and awed into silence at the stupendous hand-work of Almighty God. No glowing language, no descriptive eulogy by man, nor the thrilling measures of the poet's verse can paint the wonders of our human frame." * * *

* * * "The physician is the guardian of this vast laboratory of nature, and in order to show the great responsibility that lies upon him, let us for a moment consider some of his duties. The paramount object of every practitioner should be to heal the sick, bind up the wounded, and care for the distressed in the most scientific, honorable, and gentlemanly manner. This being the case, an intelligent profession is demanded; demanded for a two-fold reason: first, because of the importance of the office of the practitioner, his duty toward those placed within his trust, and also because of the advanced age in which we live. The days of log cabins, ox teams, spinning wheels, hand looms, tallow candles and quack doctors are ended. We are warranted in the belief that the America of fifty years ago is just as much the America of today, as the America of today will be the America of fifty years hence. We are living in times of mighty advancement, and the ragged, shoeless, hatless boy of the street has opportunity to learn more in a single year than did his forefathers in ten. In ages gone by, the modern means of securing knowledge was not placed within the reach of the common people, but today our homes are filled with magazines, newspapers, models of taste and labor and the knowledge of art. These advantages increase our opportunities and add to our responsibilities. The time was, in some of our southwestern states, when a practitioner's complete equipment consisted of a box of quinine, a keg of whiskey, a mustang pony and two revolvers. Evidences of quackery practiced in years gone by are still fresh in our memories. I remember a circumstance which transpired in the presence of a personal friend, in the State of Nebraska in 1880, during the malarial season. A western doctor was called to visit a family sick of fever and ague. After the usual salutation and examination of their cases, he said: "Some of you are seriously ill; your chances for recovery are certainly very slender, unless prompt action and extreme measures are resorted to. You will at once get some fish-worms, boil them in new milk and then give the liquid to the sick members of the family once every hour. If this treatment fails, I know of no other that will restore health under the circumstances." Such transactions were numerous and of vital injury to all honest, intelligent, and honorable gentlemen connected with the practice of medicine; but we rejoice that their days are numbered and that pure dignity and ignorance never go hand in hand. The people of today are a reading, intelligent and observing people and will not be imposed upon. The dignity of the profession is largely dependent upon the gentlemanly conduct of the practitioner; haughtiness or arrogance are sometimes mistaken for dignity, but they are vastly different. True dignity, in any

profession, is gentlemanly, kind, charitable, and never fails to receive a just reward.

"The dignity of the profession is sometimes injured by young and ambitious physicians, who are so anxious to succeed that they frequently forget the obligations of the practitioner to those engaged in the same profession. Everyone contemplating the practice of medicine should remember that success cannot be secured in a single day or year, and that the only sure road to a successful life is the way which leads us through the fields of honesty and fair dealing one with another. While we rejoice in the vigor of manhood, and love to see every young man energetic and aspiring, we should at all times remember that our obligations to others should never be disregarded. On the other hand a lack of self-confidence or desire to win has a damaging influence and should always be avoided." * * *

* * * "We cannot acquire success in any profession or business in a day or even in a year. I, as a marksman, may make a marvelous shot, and it is the wonder of the community and conversation of all. A young man just commencing the practice of law makes a great plea before a jury, and by this, it is generally conceded that he won the case and secured the verdict, yet this only gives him limited local reputation.

"Col. R. Finley Smiley, the distinguished Southern orator, when addressing a class of law students, very timely and very eloquently said: 'Were a young lawyer enabled to incorporate all the legal knowledge of all the learned lawyers of heaven to the chariot of eloquence and ride forth with Samson-like strength and Demosthene's oratory and hurl the fiery darts of burning speech into the ears of the jury, until each and every juror would, with weeping eyes and throbbing heart, fall speechless under the great pyrotechnical display of genius, he would then have only secured a local reputation and one which, if not added to, would wither and die before the frosts of ten winters had passed away.'

"A mechanic erects a costly house with wonderful dispatch and great skill, and for a time he is the subject of conversation in all the mechanical circles of the neighborhood. Or a young minister delivers a magnificent sermon—strong in logic and practical in its conclusions—and in a little time he is the admired of all the admiring, yet this is not reputation, this is not character, it is simply fleeting notoriety, which of itself alone is almost valueless. A physician cures one remarkable case, in which he restores the almost dead to life, and he also secures this notoriety for an hour. But I, as a marksman, must be able to make a winning shot whenever I raise my rifle. The young lawyer will be expected to make subsequent efforts of equal strength, if not stronger than he made on a prior occasion. He will have to make strong the weak points of law and present the case to the jury, successfully carrying it with him, before he will ever secure the reputation and be recognized as a great lawyer. The young mechanic will have to furnish evidence of perseverance, skill, and success, time after time, before a meritorious character is wholly formed. Although the young minister may be petted and fondled by some who would love to do him favor, he must remember that he will be compelled to think out for himself very many eloquent sayings and figures of speech and evince evidences of masterly reason before he will ever be acknowledged as a fine

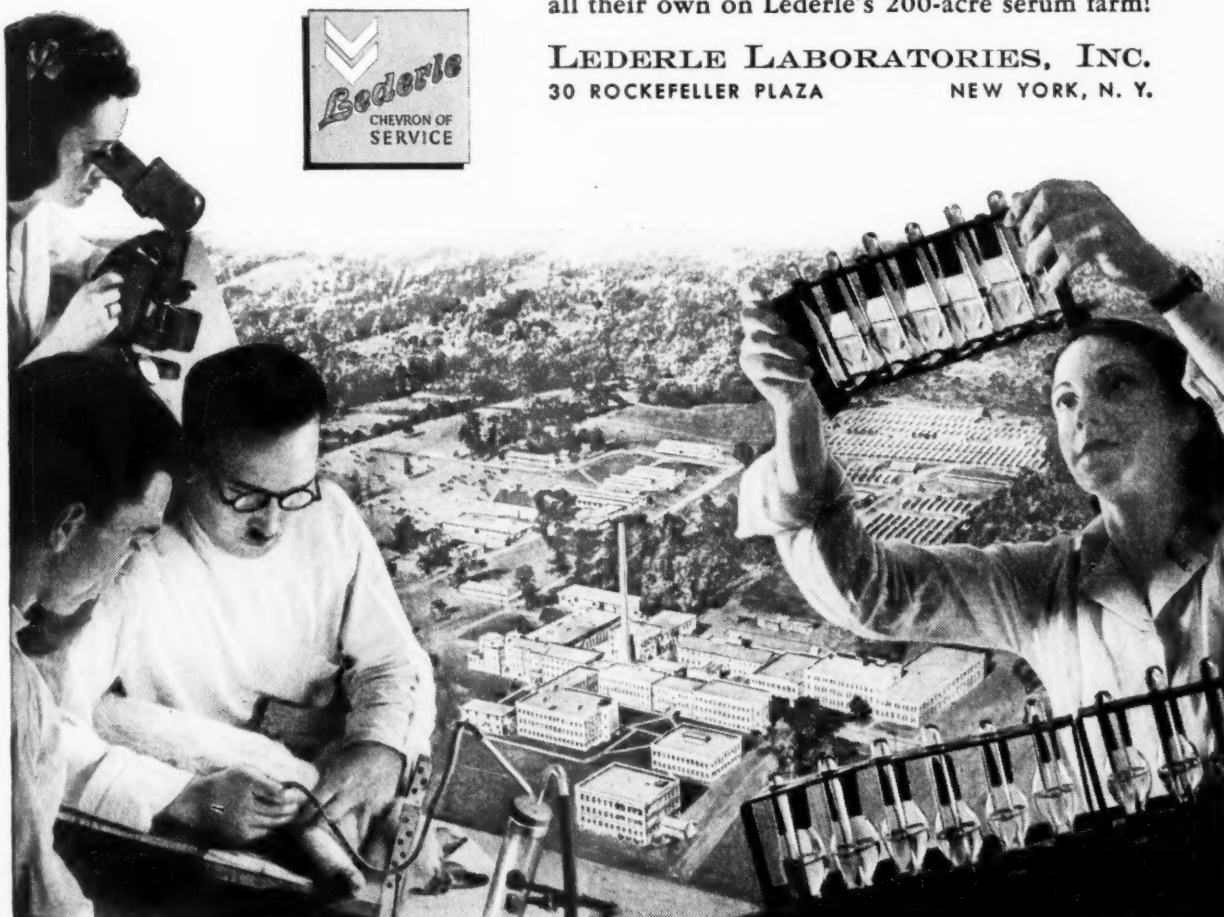
(Continued on Page 334)

Research on a large scale *at Lederle Laboratories*

Lederle is spending over \$100,000 a year on sulfonamide research and still more on other pharmacological investigations. But the traditional eminence of Lederle is in biologicals and the bulk of its research, employing many experienced scholars and a generous-sized staff, is devoted to blazing new paths toward better and still better antitoxins, anti-sera and vaccines. There are over sixty virus diseases of man or beast as yet unconquered, a new concept of the nature of virus to be applied and new tools like the air-borne centrifuges (60,000 r.p.m.), the Tiselius machines and the electron microscope, all at work today for Lederle.

Fascinating fun for an eager staff in buildings all their own on Lederle's 200-acre serum farm!

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30 ROCKEFELLER PLAZA NEW YORK, N. Y.



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logician or a great preacher. And the young doctor has yet to watch over more than one desperate case of sickness, and study the deranged system of more than one poor dying patient before he can justly claim title of a great physician.

"These cold facts sound harshly in the ears of thousands of young men, who are dissatisfied with this law and would like to have it changed. They think it strange that the young lords of creation, endowed with such wonderful faculties, accomplishments, and wisdom, cannot at once receive the tribute and homage paid to one whose whole life has been a life of study and of toil. This is the primary cause of failure in thousands of cases.

"Too many young men are willing to make a few powerful efforts and then sit down in discouragement and gloom and wait for fortune to crown them with success. In view of the fact that there is no excellence without great labor, it is the duty of everyone, whether old or young, to achieve every possible victory by personal efforts. Having spent many years in the practice of medicine, my knowledge has been derived by practical experience; and realizing the great necessity of an intelligent profession, I entreat each and every one of you, as fellow laborers, to use every instrumentality for the furtherance of the profession we have espoused, that good may be accomplished and relief brought to every suffering one of the human family that is placed within our care. And if our breasts bear no jewels betokening the approval of an earthly monarch, we know in our own hearts that we have the approval of One greater than all kings and potentates.

"Thanking you for the many tokens of regard and honor shown me and wishing you all abundant success in every laudable endeavor to advance the interest of the profession, I close."

COUNCIL AND COMMITTEE MEETINGS

1. *Wednesday, April 9*—6:30 p. m.—Industrial Health Committee—Hotel Olds, Lansing.
2. *Wednesday, April 16*—7:30 p. m.—Representatives of Groups Interested in Afflicted Child Legislation—Hotel Olds, Lansing.
3. *Thursday, April 24*—3:00 p. m.—Legislative Committee—Hotel Olds, Lansing.
4. *Wednesday, April 30*—4:00 p. m.—Child Welfare Committee—WCMS Bldg., Detroit.
5. *Wednesday, May 7*—4:00 p. m.—Committee on Distribution of Medical Care—Hotel Olds, Lansing.
6. *Thursday, May 8*—3:00 p. m.—Executive Committee of The Council—Hotel Olds, Lansing.

NEW COUNTY SOCIETY OFFICERS

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Vice President—K. W. Dick, M. D., Imlay City
Secretary-Treasurer—H. M. Best, M. D., Lapeer
Delegate—D. J. O'Brien, M. D., Lapeer
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Delegate—R. A. Springer, M. D., Centerville
Alternate Delegate—J. W. Rice, M. D., Sturgis

COUNTY MEDICAL SOCIETY MEETINGS

- Bay*—Wednesday, March 26—Bay City—Speaker: Robert Moehlig, M. D., Detroit—Subject: "Newer Advances in Endocrinology."
Wednesday, April 9—Bay City—Speaker: Gordon Myers, M. D., Detroit—Subject: "Sulfathiazole."
Berrien—Thursday, April 17—Benton Harbor—Speaker: John M. Sheldon, M. D., Ann Arbor—Subject: "Allergy."
Calhoun—Tuesday, April 1—Battle Creek—Speaker: Robert S. Breakey, M. D., Lansing—Subject: "Gonococcal Infection in the Female."
Dickinson-Iron—Thursday, April 3—Iron Mountain—Speaker: Herbert Landes, M. D., Chicago—Subject: "Hematuria as it Pertains to General Practice."
Hillsdale—Thursday, March 27—Hillsdale—Speaker: S. Milton Goldhamer, M. D., Ann Arbor—Subject: "Diseases of the Blood and Blood Organs."
Ingham—Tuesday, April 15—Lansing—Speaker: Frederick H. Falls, M. D., Chicago—Subject: "Extra Uterine Pregnancy."
Jackson—Tuesday, April 15—Jackson—Speaker: Robert S. Breakey, M. D., Lansing—Subject: "Medical Responsibility in Venereal Disease Control."
Kalamazoo—Tuesday, April 15—Kalamazoo—Speaker: Charles F. McKhann, M. D., Ann Arbor—Subject: "Diarrhea and Vomiting in Infants." Also colored motion pictures of contagious diseases presented by Harry Towsley, M. D., Ann Arbor.
Kent—Tuesday, April 8—Grand Rapids—Speaker: S. Milton Goldhamer, M. D., Ann Arbor—Subject: "The Use of Liver and Iron in the Anemias."
Muskegon—Friday, April 18—Muskegon—Speaker: Phillip Lewin, M. D., Chicago—Subject: "Common Disorders of the Foot and Ankle."
Oakland—Wednesday, April 2—Rotunda Inn—Speaker: Arthur C. Curtis, M. D., Ann Arbor—Subject: "Recent Advances in Chemotherapy."
St. Clair—Tuesday, March 25—Port Huron—Speakers: W. L. Brosius, M. D. and F. H. Topp, M. D. of Detroit, conducted a clinical pathological conference.
Thursday, April 8—Port Huron—Business meeting.
Shiawassee—Thursday, April 17—Owosso—Regular meeting.
Washtenaw—Tuesday, April 8—Ann Arbor—Speaker: John M. Sheldon, M. D., Ann Arbor—Subject: "Allergy in General Practice."
Wayne—Monday, May 5—General Meeting, joint session with the Woman's Auxiliary May 12—Medical Section Meeting. Speaker: Bernard I. Comroe, M. D., Philadelphia—Subject: "Arthritis."
May 19—Annual Meeting. Election of Officers.
West Side (Wayne County)—Wednesday, April 16—Speakers: Samuel J. Levin, M. D., Detroit on "Eczema and Fungus Allergy"; Frank L. Ryerson, M. D., Detroit on "Common Diseases of the Optic Fundi" and presentation of talking motion picture entitled "The Pre-school Child."

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CADillac 7940

Kahn and Kline Test
Blood Count
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Allergy Tests
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Ipral is quite rapidly eliminated and the patient awakens generally calm and refreshed. Its effective dose is small (2 to 4 grains) and it is free from cumulative effects when properly regulated. Even in larger therapeutic doses the effect on heart, cir-

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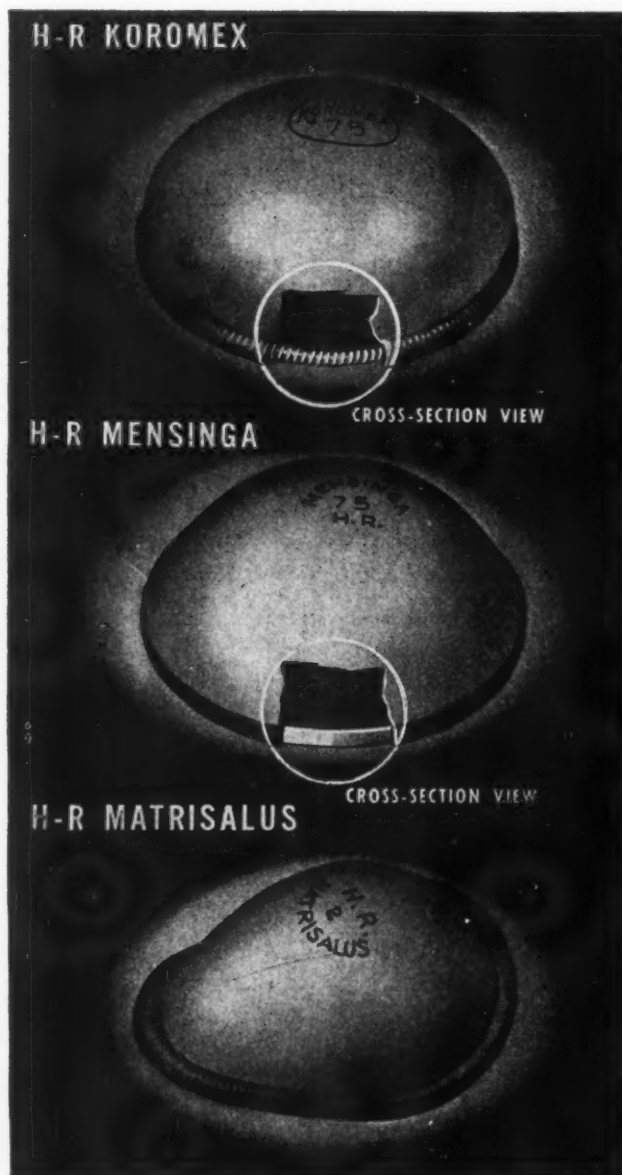
IPRAL CALCIUM is supplied in 2-grain tablets as well as in powder form for use as a sedative and hypnotic; also in $\frac{3}{4}$ grain tablets for use when it is desired to secure a continued, mild sedative effect throughout the day.

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The H-R Koromex diaphragm (coil spring type) is available in sizes from No. 50 to No. 105 mm., and is indicated for use in all normal anatomies.

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The H-R Matrisalus diaphragm is available in sizes—No. 1 to No. 6 corresponding to 65, 70, 75, 80, 85 and 90 mm. This special shaped diaphragm is indicated in cases of cystocele or prolapse where, owing to relaxed vaginal walls, the ordinary diaphragm cannot be retained in position.

Send for copy of "Physician's Diaphragm Chart
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CEREVIM is a pre-cooked cereal food of high nutrient values carefully balanced for the dietary requirements and digestive abilities of babies. It gets its calcium and phosphorus from milk powder and it is distinctly appetizing.

Hence, a willing intake! Infants gain weight and height on Cerevim.

All of which was indicated in 1937 in controlled studies on infants by Joslin and Helms¹ whose teachings are followed in the Cerevim formula.

Cerevim was designed to be *baby's* first solid food at 4 months, yet

—it has food values needed in the diets of adult invalids or dyspeptics requiring soft, bland, low-ash, easily digested diets attractive to frail appetites;

—Admiral Byrd bought it for 25% of the balanced trail ration for his husky men in the Antarctic.

Council-accepted . . . Sold only through drug stores.

¹ARCH. PED., SEPT. 1937

Formula—Whole wheat meal • Oatmeal • Yellow corn meal
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PACKAGES: 1 pound and ½ pound.

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*Cerevim has been hitherto marketed on a three-year trial basis on the Atlantic seaboard by Cerevim Products Corporation with increasing encouragement from leading pediatricians; hereafter Cerevim will be made and sold by Lederle Laboratories, Inc.



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It gives uniformly good results

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One level measure of the Similac powder added to *two* ounces of water makes 2 fluid ounces of Similac. The caloric value of the mixture is approximately 20 calories per fluid ounce.



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**DIURETIC
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*for
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● The combination of the mercurial diuretic Salyrgan with theophylline (in the ratio of 2:1) constitutes an improvement in diuretic medication. It has been demonstrated that the theophylline constituent enhances both the rate and completeness of absorption of the highly effective mercurial component. Salyrgan-Theophylline is better tolerated by muscle tissue and by venous structures. Hence, there is less complaint of discomfort after intramuscular injection and less likelihood of producing thrombosis after intravenous administration.

HOW SUPPLIED: Salyrgan-Theophylline solution (containing 10% Salyrgan and 5% theophylline) is supplied in amber ampules of 1 cc. (boxes of 5, 25 and 100); and 2 cc. (boxes of 10, 25 and 100).

Write for booklet which describes use of Salyrgan-Theophylline and contains information regarding contraindications and side effects.

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1. *Minimum Fermentation*—"The dextrin is not irritating to mucous membranes, easily digested without undue fermentation in the intestinal tract, converted into maltose and finally into dextrose before absorption. The amounts of maltose and dextrose, present or formed, and of cane sugar are rarely sufficient to produce irritation or fermentation."

Kugelmass: "Newer Nutrition in Pediatric Practice."
J. B. Lippincott Co., Philadelphia, 1940, p. 334.

2. *Maximum Assimilation*—Metabolic studies of experimental animals may have valuable implications for infant nutrition. For example, "The relative assimilation values of mixed sugars per 100 gms. of body weight are as follows: Dextrin and maltose 1.32; dextrin and dextrose 1.32; sucrose 0.76; fructose 0.50; lactose 0.16 and galactose 0.10."

Ariyama & Takahasi, Biochemische, Zeitschrift, vol. 216, p. 269, 1929.

3. *Ready Utilization*—"Karo syrup may be fed in large amounts without danger and is, at the same time, readily utilized. In our experience, it has been the most satisfactory form of carbohydrate for the feeding of normal and most sick infants."

Marriott: "Infant Nutrition."
C. V. Mosby Co., St. Louis, 1930, p. 45.

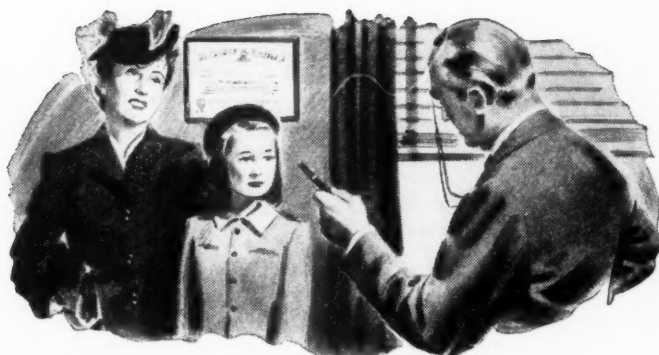


THE CHEMICAL COMPOSITION OF KARO IN GLASS AND IN TINS IS IDENTICAL

Dextrins.....	37%	1 oz. volume....	40 grams
Maltose.....	18%		120 cal.
Dextrose.....	12%	1 oz. wt.....	28 grams
Sucrose.....	4%		90 cal.
Invert Sugar.....	3%	1 teaspoon.....	20 cal.
Minerals.....	0.6%	1 tablespoon....	60 cal.
Moisture.....	25%		

(Karo—Blue Label)

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present in abundance in the child's diet.⁽¹⁾*

(1) The nutritive values of canned foods have been the subject of numerous investigations, the results of which have repeatedly demonstrated the value of commercially canned foods as sources of the essential nutrients that should receive special attention in planning the child's diet. For further particulars the references below may be consulted. *American Can Company, 230 Park Avenue, New York, N. Y.*

1939. Accepted Foods and Their Nutritional Significance, Council on Foods of the American Medical Association, Chicago.

1939. Food and Life; Yearbook of Agriculture, U. S. Dept. of Agriculture, U.S. Government Printing Office, Washington, D. C.

1939. Canned Food Reference Manual, American Can Company, New York.

1938. Nutrition Abstracts and Reviews 8, 281.



The Seal of Acceptance denotes that the nutritional statements in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.